

2011 **SUSTAINABLE DEVELOPMENT REPORT**



ONTARIO **POWER**
GENERATION

COMPANY PROFILE

Ontario Power Generation (OPG) is an Ontario-based electricity generation company. Our principal business is the efficient production and sale of electricity from our generating assets, while operating in a safe, open and environmentally-responsible manner. OPG was established under the Business Corporations Act (Ontario) and is wholly owned by the Province of Ontario.

In 2011, OPG had approximately 11,400 regular employees (down from 11,800 in 2010) and generated 84.7 terawatt hours (TWh net) of electricity, (down from of 88.6 TWh in 2010). OPG's electricity generating portfolio as of December 31, 2011, had a total in service capacity of 19,051 megawatts (MW), which consisted of:

- two nuclear generating stations with a capacity of 6,606 MW unchanged from 2010
- five thermal-fuelled generating stations with a capacity of 5,447 MW down from 6,327 MW in 2010
- 65 hydroelectric generating stations with a capacity of 6,996 MW unchanged from 2010
- two wind power turbines with a capacity of 2 MW unchanged from 2010.

In addition, OPG and TransCanada Energy Ltd. co-own the Portlands Energy Centre gas-fired combined cycle generating station. OPG, ATCO Power Canada Ltd. and ATCO Resources Ltd. co-own the Brighton Beach gas-fired combined cycle generating station. OPG also owns two other nuclear generating stations, which are leased on a long-term basis to Bruce Power L.P. ("Bruce Power"). As these are separate companies their performance is not included in this report.



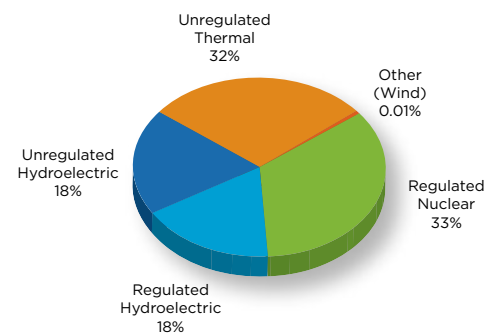
Mandate

To reliably and cost-effectively produce electricity from our diversified portfolio of generating assets while operating in a safe, open and environmentally responsible manner.

“As Ontario’s public generator, we do things ethically. Our core business may be based on the generation and sale of electricity, but it’s built on trust and respect. Respect for our organization, respect for our employees, respect for our host communities, and respect for the people of Ontario.”

Tom Mitchell - President and CEO

OPG's Generation Mix 2011



As of December 31, 2011, OPG's electricity generating portfolio had an in-service capacity of 19,051 MW.

Contents

President's & VP Environment Message	4
About this Report	6
Environment	10
Social	25
Economic	40
Appendices	46

ONTARIO POWER GENERATION FACILITIES

2 
Nuclear
Stations

2 
Leased
Nuclear
Stations

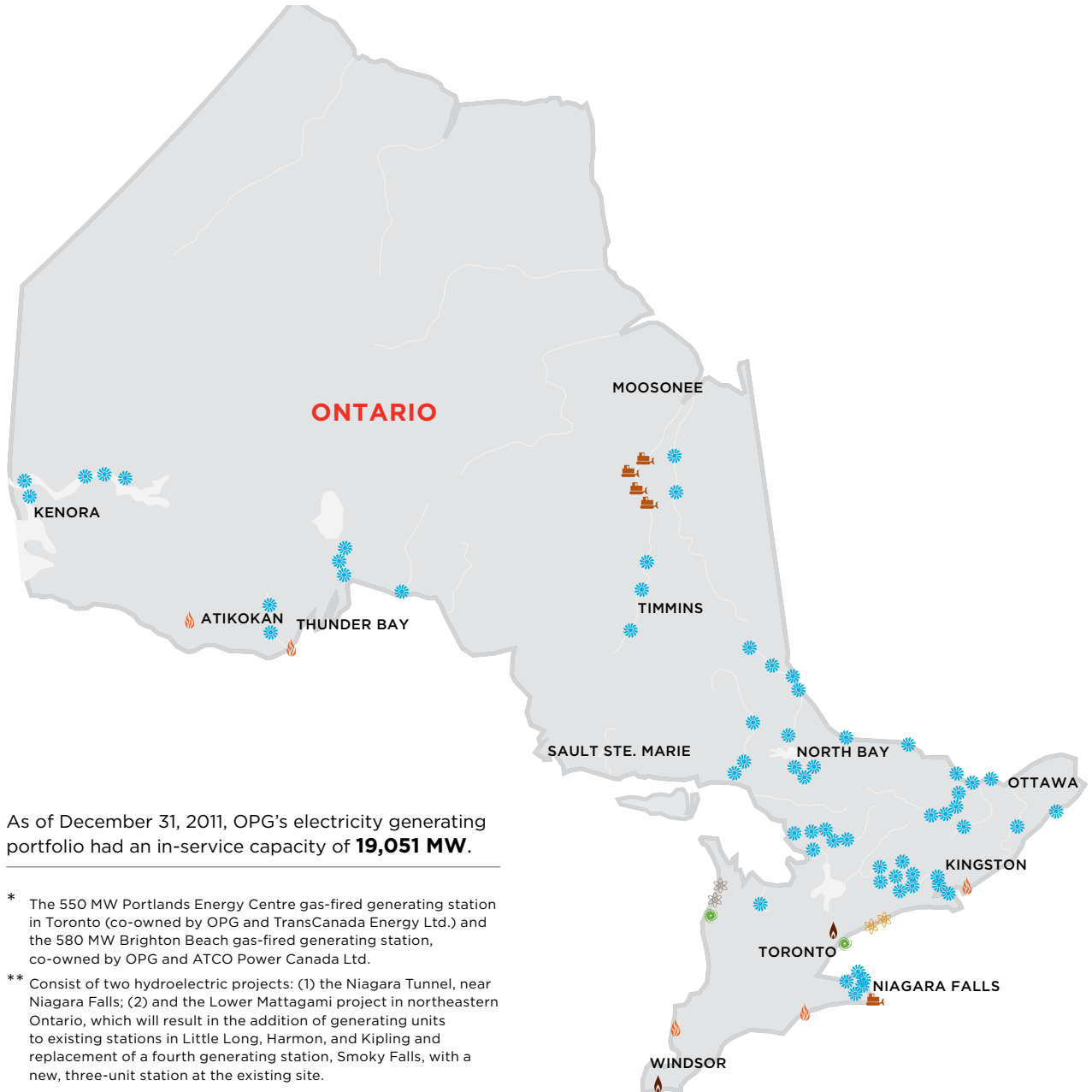
5 
Thermal
Stations

2 
Co-owned
Gas-Fired
Stations*

65 
Hydroelectric
Stations

2 
Wind
Power
Turbines

2 
Hydroelectric
Projects Under
Construction**



As of December 31, 2011, OPG's electricity generating portfolio had an in-service capacity of **19,051 MW**.

* The 550 MW Portlands Energy Centre gas-fired generating station in Toronto (co-owned by OPG and TransCanada Energy Ltd.) and the 580 MW Brighton Beach gas-fired generating station, co-owned by OPG and ATCO Power Canada Ltd.

** Consist of two hydroelectric projects: (1) the Niagara Tunnel, near Niagara Falls; (2) and the Lower Mattagami project in northeastern Ontario, which will result in the addition of generating units to existing stations in Little Long, Harmon, and Kipling and replacement of a fourth generating station, Smoky Falls, with a new, three-unit station at the existing site.

MESSAGE FROM THE PRESIDENT AND VP ENVIRONMENT

OPG is dedicated to ensuring that our operations do not compromise the ability of future generations to meet their own needs. As a company that values sustainable development, OPG works to reduce any negative environmental impact we may have - while safely producing low-cost, low emission electricity for the people of Ontario.

OPG believes that sustainable development and social responsibility go hand in hand. As a company whose actions have an impact on society, we are committed to becoming a leader in Ontario's transition to a more sustainable energy future.

In advancing this goal, OPG is committed to active engagement as a corporate citizen; operating in an environmentally responsible manner; and demonstrating integrity and excellence in the conduct of our business. Our sustainable development commitment also includes promoting health and wellness among our employees; achieving zero injuries in our workplace; fostering equality and diversity; and practising fiscal responsibility. Our success is illustrated by our performance in these and other areas.

- In 2011, Corporate Knights recognized OPG as one of Canada's Best Corporate Citizens. The rankings were based on environmental, social and governance indicators as well as the management of carbon, energy, water usage and waste production.
- OPG continued to be a leader in biodiversity - a key aspect of which is an extensive native tree planting program which has the multiple benefits of restoring habitat, as well as helping to mitigate and adapt to climate change.



Tom Mitchell
President & CEO



Barbara Reuber
VP Environment

- Also in 2011, 96 per cent of the electricity of OPG's generation came from sources that produce virtually no emissions contributing to smog, acid rain, or climate change. OPG's commitment to stop burning coal at our thermal stations by the end of 2014 is a significant step to fight climate change.
- In 2011, OPG's environmental performance met or was better than target for all corporate performance measures. Most notable were the steady improvements in tritium and carbon-14 emissions, which have been reduced every year since 2008.
- We continued to focus on safety in our uncompromising drive to zero injuries. Our safety performance is consistently one of the best among Canadian electrical utilities. In 2011, OPG achieved the best Accident Severity Rate and All Injury Rate safety performance in our history.

“From reducing environmental impacts, to striving for zero workplace injuries, to contributing to the well-being of the communities in which we operate...OPG remains committed to creating value for Ontarians through performance excellence.”

Tom Mitchell, OPG President and CEO



▶ Annual nest box cleaning at Nanticoke GS in Haldimand County

- As a low-cost electricity generator, OPG helps moderate the price of electricity in Ontario.
- Last year OPG staff developed an innovative strategy to finance our Lower Mattagami project – resulting in considerable savings for the company. The unique approach was awarded the “Pinnacle Award” from the Association for Financial Professionals.
- Committed to our communities, OPG and our employees supported over 1,200 charitable and not-for-profit community, education and environmental initiatives, through sponsorship, donation, and thousands of hours of volunteer and pro-bono work.

From reducing environmental impacts, to striving for zero workplace injuries, to contributing to the well-being of the communities in which we operate, OPG remains committed to creating value for Ontarians through performance excellence and the safe production of low-cost electricity.

This report is designed to provide transparent disclosure of that performance. It documents our achievements, identifies our opportunities

to improve, and explains the steps we are taking to address our challenges. It also reflects our commitment to continuously improve in key areas such as: providing value to Ontarians, accountability; openness; safety; and performance excellence.

We invite and welcome your feedback.

TOM MITCHELL
President & CEO

BARBARA REUBER
VP Environment

OPG’s website ([www.opg.com/safety and environment/](http://www.opg.com/safety%20and%20environment/)) provides information related to environmental programs and has a link to the Annual Report.

ABOUT THIS **REPORT**

This report will provide insights into our environmental, social and economic performance.

Scope

This report presents OPG's performance related to all operations and sites for the period of 2011. Copies of previous years' reports can be found at www.opg.com.

Report Objectives

OPG's objectives in publishing this report are to convey our commitment to sustainable development and to communicate our environmental, social and economic performance in an open and transparent fashion.

Stakeholder feedback indicates that the report is regarded as credible and well organized. For this reason OPG has elected to retain the existing format. A table mapping GRI criteria to report content can be found in Appendix C (page 53).

Stakeholders and Partners

OPG values our relationships with, and recognizes our obligations to, our stakeholders, partners and communities. Establishing and maintaining relationships is important to us. We recognize that this is key to maintaining our licence to operate.

Our stakeholders and partners include: the communities in which we operate, customers, educational institutions, public, non-government organizations (NGOs), suppliers, unions, the media, peer industry groups, employees, and government and agencies at federal, provincial and municipal levels. Further, our relations with First Nations and Métis communities continue to evolve.

Among industry groups we work closely with the Canadian Electricity Association (CEA). Founded in 1891, the CEA is the national forum and voice of the evolving electricity business in Canada. OPG actively participates on a number of committees and working groups including Sustainable Electricity, Health and

Safety and Generation. OPG contributed to the development of the CEA's Sustainable Development Indicators which measure performance against baseline in the areas of environment, society and economy.

In the spirit of continual improvement and to support our efforts to engage the public and our stakeholders, we welcome feedback (contact information is available on our website and on the back cover of the report). In addition to an online survey, feedback on the 2010 report was received from the public, employees, academia, NGOs, and the electricity sector.

Continual Improvement

OPG is committed to continually improve engagement with the public, our partners and stakeholders. In 2011, OPG commissioned a panel of experts from academia and NGOs to evaluate our sustainable development reporting and identify what we're doing well and where we could improve. Their insights have been taken into account.

OPG's 2010 Sustainable Development report was also reviewed by the EXCEL Secretariat (part of the Delphi group - a strategic consultancy firm specializing in corporate sustainability). OPG was benchmarked against other companies that report on sustainable development metrics and our report was ranked as "high achievement."

Recommendations incorporated in this year's report include improvements to the presentation of information and inclusion of high level conclusions related to performance.





Data Integrity

Assurance of the accuracy of data documented in this report is achieved by a variety of means. 2011 financial statements were audited by Ernst and Young. Their conclusion was that in all material respects the statements fairly

presented the financial position of OPG. OPG's audited consolidated financial statements and management discussion and analysis can be accessed on OPG's website at www.opg.com, the Canadian Securities Administrators' website at www.sedar.com or can be requested from the company.

Prescribed operational and performance data is subject to annual audit as part of environmental and health and safety management system programs, OPG's ongoing audit programs, and the CEA's data verification program. Reported data is validated by both line management and organizationally independent staff.

Legend

LEGEND	
Performance Target	Performance Trend
 Performance better than threshold	 Performance trend is improving
 Performance fails to meet but within 10 per cent of threshold	 Performance trend neither improving nor declining
 Performance fails to meet and is greater than 10 per cent from threshold	 Performance trend is declining

Targets

Consistent with industry norms, the term "target" often refers to threshold performance. Desired performance may be greater or less than the threshold depending on the specific parameter. For example, waste generation should be less than threshold and trending downward. Conversely waste diversion from landfill should be above threshold and trending upward. Performance measures have been colour-coded to indicate performance, and are accompanied by arrows indicating whether performance is improving, remaining static or declining. All 2012 performance "targets" at a corporate level either remain unchanged from 2011 or have been changed to drive improved performance.

Corporate Scorecard

OPG considers regulatory compliance to be a minimum, non-negotiable standard for progress towards sustainable development. Each year, OPG sets targets in key areas for improving performance beyond compliance in certain areas. Our progress is tracked and managed through our management systems, and is reinforced by an Annual Incentive Plan that links management's compensation to meeting or surpassing established targets. The corporate scorecard considers performance in fourteen key areas including safety, environment, financial performance, fleet operating performance, and project performance. OPG performed acceptably in all performance areas; better than target in ten areas and better than challenging stretch targets in two areas.

OPG accepts responsibility for the impacts of our decisions and activities on society and on the environment through transparent and ethical behaviour that:

- is consistent with sustainable development and the welfare of society;
- takes into account the expectations of stakeholders;
- is in compliance with applicable law and consistent with international norms of behaviour; and
- is integrated throughout the organization.

OPG is committed to ensuring that employees understand, and incorporate the principles of sustainable development into daily work programs. Supervisors and managers are required to participate in training to ensure that they can advise employees under their direction of the need and means to apply sustainable development principles. In 2011, 345 staff were trained, bringing the total to approximately 4,500. At year end 2011, OPG met our goal of ensuring that those supervisors and managers, identified as requiring training, have been trained. Starting in 2012 the training will target new supervisors (approximately 170 annually).



▲ Well-maintained assets improve reliability.

OPG Accountability and Governance

BOARD

OPG's Board of Directors has substantial expertise in managing and restructuring large businesses, managing and operating nuclear stations, managing capital intensive companies, managing major projects, and overseeing regulatory, government and public relations. The Board level policies include: Code of Business Conduct, Disclosure, Environment, Health and Safety, Dam Safety, First Nations and Métis Relations.

CHAIR



Chairman - The Honourable Jake Epp

PRESIDENT & CEO



President and CEO - Tom Mitchell - accountable to the Board of Directors for ensuring that the company manages the environmental, social and economic aspects of its business in a manner consistent with applicable internal policies and Code of Business Conduct. Policy commitments are implemented by programs and governance in which specific accountabilities are identified.

Presidential policies include: Compensation and Benefits, Employee & Labour Relations, Diversity & Human Rights, Biodiversity, Land Assessment & Remediation, Spills Management, Talent Management, Security Risk Management.

ENTERPRISE LEADERSHIP TEAM



Business and Administrative Services
SVP - Rob Boguski



Commercial Operations and Environment
SVP - Bruce Boland



Hydro-Thermal Operations
SVP - Frank Chiarotto



Corporate Business Development and Chief Risk Officer SVP - Carlo Crozzoli



Finance & CFO SVP - Donn Hanbidge



People and Culture and Chief Ethics Officer SVP - Barb Keenan



Strategic Initiatives
EVP - John Murphy



Chief Nuclear Officer
Wayne Robbins



Nuclear Projects
EVP - Albert Sweetnam



Law and General Counsel
SVP - Chris Ginther

Governance

For more information related to the membership of our Board of Directors, Executive Management Team, as well as access to key governing documents such as policies go to www.opg.com/about/governance.

Key Sustainable Development Performance - 2011

Category	Performance Measure (2011 Target) (if applicable)	Jan. 1 - Dec. 31 2010	Jan. 1 - Dec. 31 2011
Significant Environment Event*	Annual Incentive Plan (AIP) Event = 0	0	0
Spills	A = 0	0	0
	B = 0	0	0
	C = 29 (Business Unit - Continual Improvement) ⁽¹⁾	25	18
Regulatory Compliance	Major Infractions ⁽²⁾ = 0	0	0
	Other Infractions ⁽³⁾ = 45 (Continual Improvement) ⁽¹⁾	23	15
	Environmental Penalty (for tracking and trending purposes)	4	0
ISO 14001 Certification	Maintain (Business Unit - Continual Improvement) ⁽¹⁾	Maintained	Maintained
Hydro: Energy Efficiency	# Projects Completed ⁽⁴⁾ = 7 (8.65 GWh) (Business Unit - Continual Improvement) ⁽¹⁾	11 (33.49 GWh)	11 (13.01 GWh)
Radiation Emissions	Tritium Emissions (Ci/yr) = 21,400 (Business Unit - Continual Improvement) ⁽¹⁾	19,266	18,837
	C-14 Emissions (Ci/yr) = 145 (Business Unit - Continual Improvement) ⁽¹⁾	118	76
Radioactive Waste Management	Low & Intermediate Waste ⁽⁵⁾ L&ILRW = 3,068(m ³) (Business Unit - Continual Improvement) ⁽¹⁾	2,710	2,943
Air Emissions (Thermal)	CO ₂ emissions - gross 11.5 Tg (Business Unit - Continual Improvement) ⁽¹⁾	12.7	4.4
	NO _x emissions Reg. Limit - gross 14.7 Gg ⁽⁶⁾ (Business Unit - Continual Improvement) ⁽¹⁾	15.9	5.8
	SO ₂ emissions Reg. Limit - gross 112 Gg ⁽⁶⁾ (Business Unit - Continual Improvement) ⁽¹⁾	37.6	11.2
	Acid Gas emissions - total gross - 236 Gg ⁽⁶⁾ (Business Unit - Continual Improvement) ⁽¹⁾	53.5	17
Thermal: Continual Improvement	# Initiatives = 8 ⁽⁷⁾ (Business Unit - Continual Improvement) ⁽¹⁾	11	12
NWMD: Incinerator Emissions	Dioxins / Furans Emissions (ng TEQ/Rm ³) = 0.08	0.00297	0.00179
Ash & Gypsum diverted from landfill	Gg (per cent)	388,885 (68%)	206,098 (87%)
Critical Group Dose	Pickering < 5 micro sieverts	1.0	0.9
	Darlington < 5 micro sieverts	0.6	0.6
Accident Severity Rate	Days lost per 200,000 hours (target = zero injuries)	2.04	1.10 ⁽⁸⁾
All Injury Rate	Injuries per 200,000 hours (target = zero injuries)	0.92	0.56 ⁽⁸⁾

+ As determined by CEO. Significant Environment Event target is included in the Corporate Annual Incentive Plan (AIP).

⁽¹⁾ Business Unit Continual Improvement - Business Units has established internal objectives for continual improvement of environmental performance.

⁽²⁾ Major Infractions - Director's Orders, Charges and Convictions.

⁽³⁾ Other Infractions - including but not limited to any incident resulting in a Notice of Violation, an order or compliance action.

⁽⁴⁾ Energy efficiency results are reported when projects are completed, and equipment is back in service.

⁽⁵⁾ Low and Intermediate Level Waste produced includes "other wastes" from Kinectrics, Tritium Removal Facility and Nuclear Waste Management Division attributed to Darlington and Pickering Operations.

⁽⁶⁾ Regulatory Acid Gas Limits - In 2011, O.Reg. 397/01 allocated 14.7 Gg of NO_x and 112 Gg of SO₂ allowances to OPG. O.Reg. 153/99 limits OPG's total gross SO₂ emissions to 175 Gg and the total gross acid gas emissions to 236 Gg.

⁽⁷⁾ Twelve Continuous Improvement Initiatives were completed in 2011 to exceed the Thermal performance target of eight completed initiatives: Nanticoke GS - Ash Lagoon Effluent pH Control to Eliminate MISA Toxicity Events, MISA Compliance in Reduced Generation, Spill Mitigation, 2011 Waste Management Program, and Biodiversity Program; Lambton GS - Units 1 & 2 Shutdown Compliance Assurance, and Rehabilitation of Bowman's Creek; Atikokan GS - Develop Chemistry and Environment Compliance Managed System; Lennox GS - CCW Discharge Channel Drains (Spill Prevention and Mitigation), and Improvements to Ignition Oil Delivery System; and Thunder Bay GS - Develop Chemistry and Environment Compliance Managed System and Implement Lands for Learning Program.

⁽⁸⁾ Best in history

ENVIRONMENT

Environmental stewardship is a cornerstone of OPG's commitment to responsible corporate citizenship. OPG's environmental programs are designed to reduce the footprint of our operations. In 2011, OPG met or bettered all environmental performance targets, and we remain committed to continual improvement.



▲ Tree Planting at Twelve Mile Creek - DeCew GS in St. Catharines

Environment Contents	
Environmental Management	10
Resource Use Efficiency	11
Air	12
▪ Biomass	13
▪ Climate Change	15
▪ Electric Vehicles	15
Water	16
▪ Fish	17
▪ Spills	18
Land	18
▪ Waste	18
▪ Greening Supply Chain	20
▪ Biodiversity	21

Environmental Management

OPG has established processes to manage our environmental impacts. Processes are implemented to eliminate (where possible), control, minimize, mitigate, or compensate for negative impacts, and to enhance positive impacts.

OPG's corporate groups, generation facilities, Nuclear Waste Management, and Nuclear Supply Chain remain certified to ISO 14001 Environmental Management System (EMS), which help ensure the company complies

with our environmental policy within a framework of continual improvement. OPG's Environmental Policy ([www.opg.com/safety and environment](http://www.opg.com/safety-and-environment)) includes commitments to meeting or exceeding regulatory and other requirements, to environmental stewardship, to integration of environment into decision-making, to employee engagement, and to enhancing the social and environmental well-being of our communities. In addition to the internal commitment to sound environmental management, both the CEA and Canadian

Nuclear Safety Commission (CNSC) require EMSS.

Environmental assessments and other project approval processes are conducted for projects that have the potential to impact the environment.

Regulatory Compliance

In 2011, OPG had no major infractions (orders, charges or convictions), 15 other infractions (down from 23 in 2010) well below the upper threshold of 45, and zero environmental penalties. OPG is committed to the continued reduction of "other infractions."

Resource Use Efficiency

Electricity represents about 80 per cent of total utility costs at OPG's head office. Electricity and water consumption have been reduced in each of the past three years and are now 12 per cent and 34 per cent respectively below 2008 consumption. Over the past three years steam consumption has risen marginally by three per cent due to an increase in the number of heating degree days and a reduction in the availability of heat reclaim units while new units were being installed.

OPG remains committed to programs that reduce our consumption of energy. Programs include specifying energy efficiency for new buildings, retrofitting existing buildings, procuring energy efficient equipment (such as lighting and computers), and upgrading the

Head Office Resource Consumption Fast Facts

- ▶ Electricity consumption was 33,188 MWh, a 7.64 per cent reduction from 2010 (5.62%*).
- ▶ Water consumption was 159,322 m³, a 3.97 per cent reduction from 2010 (8.05%*).
- ▶ Steam use was 23,615 mm BTU, a 12.99 per cent increase from 2010.

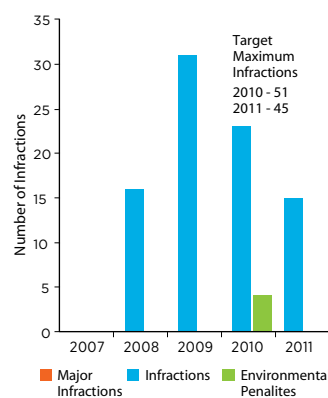
*Adjusted for difference between number of billing days versus days in calendar year.

efficiency of turbine runners and transformers in our generating facilities.

In 1994, OPG's predecessor company, Ontario Hydro, began our energy efficiency program. After 17 years the program remains successful. From 1994–2011, OPG's annualized energy savings have increased by 2,481 GWh, resulting in annual savings of \$131.5 million (at the average of 5.3 cents/kWh paid to OPG) and emission savings of 2.9 million tonnes of CO₂. For information, go to www.opg.com (safety/energy).

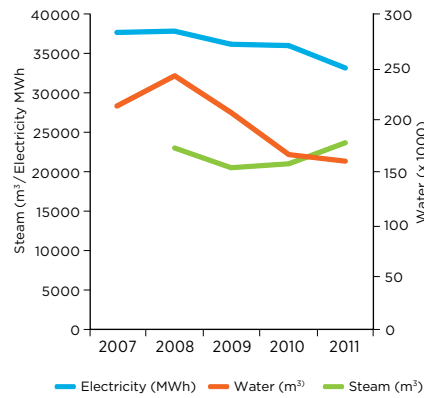
In 2011, OPG achieved new internal energy efficiency savings of 12.1 GWh/yr, primarily attributable to efficiencies in hydroelectric and real estate operations. Examples of the eleven hydroelectric projects that were completed are turbine runner upgrades at Des Joachims GS (G4: 3.2 GWh, and G8: 2.5 GWh); transformer replacements at Des Joachims GS (MOT T4: 1.1 GWh), Elliott Chute GS (8T1: 0.06 GWh), Silver Falls GS (Tx: 0.149 GWh), and Pump GS (MOT: 2.0 GWh); and the Johnson Valve installation at Sir Adam Beck I GS (G7: 3 GWh). Energy efficiency results are reported when projects are completed, and equipment is back in service.

Regulatory Infractions



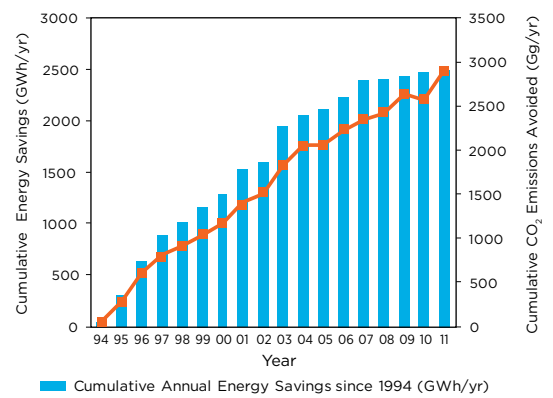
● Better than threshold ● Trend improving

Resource Consumption



● Trend improving ● Trend improving ● Trend Variable

Cumulative Energy & CO₂ Emissions Savings



● Trend improving

National Pollutant Release Inventory

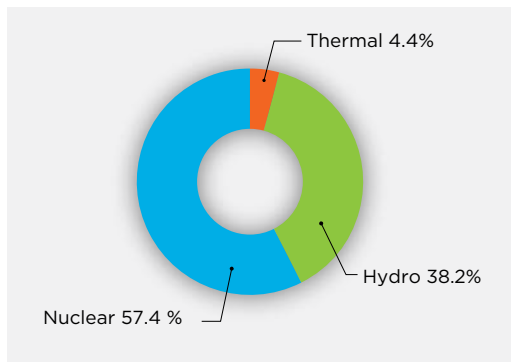
OPG's emission data reported to the National Pollutant Release Inventory (NPRI) for 2010 are represented in Appendix B. For detailed information on the breakdown of OPG's NPRI data by emissions to air, water, and land, please refer to www.ec.gc.ca (/pdb/npri/npri_home)

AIR

Generation Mix

In 2011, 95.6 per cent of OPG's generation came from hydroelectric or nuclear sources that were virtually free of air emissions that cause smog, acid rain, and global warming.

OPG 2011 Generation Mix
84,687 GW



The majority of the remaining generation came from OPG's thermal stations, which supply electricity for demand that is not first met

by sources such as hydro and nuclear. An advantage of thermal stations is their flexibility to respond to changes in demand that occur by the minute, day or year. This flexibility enables them to effectively backup intermittent sources like solar and wind. As a result electrical production from thermal plants varies as do the associated air emissions.

Thermal Generation in Transition

In 2011, Thermal continued to operate and maintain its coal fired generating assets in an environmentally acceptable and economic manner given the phase out of coal by the end of 2014 and the potential repowering of some units to alternate fuels.

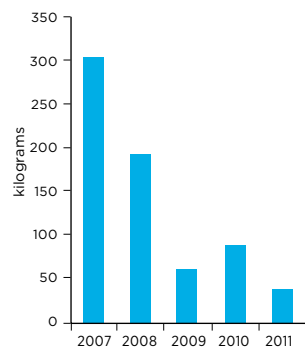
In addition to the four coal units shut down at Lambton and Nanticoke in 2010, an additional two units were placed in safe shutdown at Nanticoke in 2011.

Air (SO₂, NO_x, CO₂) emissions in 2011 were significantly lower than 2010 primarily due to lower required levels of generation, continuing the overall downward trend in emissions in recent years.

Mercury Monitoring and Reporting

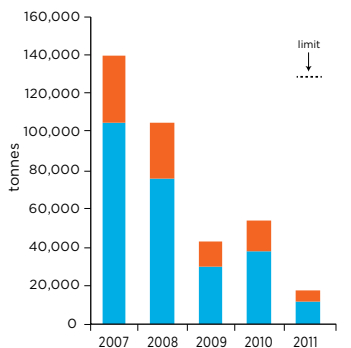
OPG's 2011 Mercury Monitoring and Reporting Program was conducted in accordance with the requirements of the Ontario Ministry of the Environment. The Mercury Canada-Wide Standard program requires routine sampling and analyses of coal, coal combustion by-

Mercury Emissions



Trend Variable

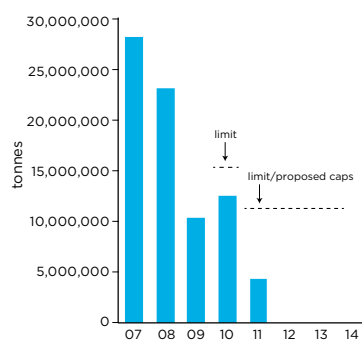
Acid Gas Emissions



Total Gross Annual SO₂ Emissions (tonnes)
Total Gross Annual NO_x Emissions (tonnes, as NO₂)

Better than threshold Trend Variable

CO₂ Emissions



Total Gross Annual CO₂ Emissions (tonnes)
Proposed CO₂ Caps

Better than threshold Trend Variable



▲ Thunder Bay GS

products and stack sampling for mercury. Annual reports are submitted to MOE.

In 2011, OPG's coal-fired facilities emitted 43 kg of mercury, the lowest level on record.

Further information on the Mercury Canada-Wide Standard can be found on the CCME website at www.ccme.ca (/about/air).

Progress on Converting Coal Units to Cleaner Fuels

Recognizing the value and attributes that OPG's coal-fired assets offer to Ontario's electricity system, a clear mandate for the conversion of some units to alternate fuel, i.e. natural gas and biomass was provided in 2011.

An environmental approval application to convert Atikokan from coal to 100 per cent clean wood pellets was submitted to the Ministry of the Environment for approval and posted on the Environmental Registry for public comment. The application and posting followed a public and First Nations' consultation process which exceeded the requirements for a project of this scope. The majority of comments received were supportive of the conversion and its importance to the economy of Northwestern Ontario, although a few reservations over the sustainability of the use of wood for power generation and the resulting climate change benefits were expressed. If approved, construction will begin in 2012.

Direction to proceed with the conversion of Thunder Bay from coal to natural gas with the capability to fuel with wood pellet biomass in the future was also reinforced. Detailed engineering and cost estimating was initiated for the conversion and the environmental approvals process for the installation and operation of the gas pipeline to Thunder Bay GS was initiated by Union Gas. An application for conversion of the plant itself will be submitted to the MOE in 2012 and will be preceded by a series of public, First Nations and Métis consultations as was the case for Atikokan. The conversion is scheduled for completion by late 2014.

In preparation for the potential conversion of Nanticoke and Lambton units from coal to natural gas, preliminary engineering design work has been initiated for conversion of some of the units.

Timelines for completion are contingent on approvals to proceed to meet Ontario electricity system requirements and environmental review.

Wood and agricultural based biomass are recognized around the world as renewable sources of energy that have significant climate change benefits. OPG's biomass program does not use food crops for fuel. All fuel sources must meet the United Nations Framework Convention on Climate Change's definition of renewable.

OPG commissioned the Pembina Institute to conduct a sustainability analysis to determine if biomass sourced from Ontario forests meets

Biomass Fast Facts

- ▶ Ontario's forests could sustainably produce two million tonnes of wood pellets per year.
- ▶ Pellet production would enable Atikokan, Thunder Bay, Nanticoke and Lambton to produce over 3.4 TWh per year of renewable electricity, enough to power approximately 300,000 homes.
- ▶ Taking into account GHG associated with producing and transporting fuel and the generation of electricity, biomass generation would reduce GHG emissions by 80 per cent on average compared to burning natural gas.
- ▶ Approximately 3,569 full-time jobs can be created from harvesting wood pellet production, and transportation, adding an average annual contribution of \$590 million to Ontario's gross domestic product.
- ▶ The Pembina study demonstrates the potential social, economic and environmental benefits of biomass.
- ▶ Canadian Electricity Association and Natural Resources Canada cite OPG's work and use OPG as a biomass sustainability case study.

▼ Biomass test burns at Atikokan GS.



the United Nations Framework Convention on Climate Change definition of renewable; to better understand the greenhouse gas reduction benefits of biomass; and to estimate the socio-economic benefits of electricity production from biomass. The analysis uses detailed forest carbon and socio-economic modelling to examine a scenario using two million tonnes of wood pellets per year from Ontario's Crown forests at four OPG coal plants. Given the study assumptions, the study found no systematic decline in forest carbon stocks over time. This finding combined with Ontario's sustainable forest management planning process and practices mean OPG's biomass program satisfies the United Nations Framework Convention on Climate Change's definition of renewable biomass.

OPG continues to develop plans for the conversion of Atikokan GS from coal to wood-based biomass fuel by 2013. Testing has shown that full electrical output (211 MW) is possible on wood-based biomass fuel and that air emissions would be significantly lower.

For more information, visit www.opg.com (/power/thermal/repowering), www.pembina.org.

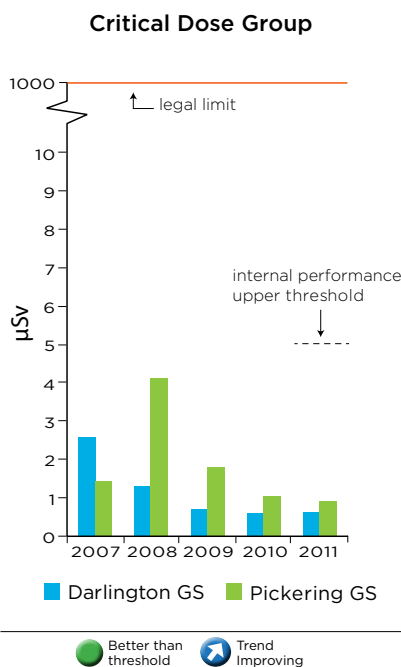
Radiation

OPG measures radiation exposure to members of the public who live in close proximity to nuclear plants in accordance with the Canadian Standards Association "Critical Group Dose" methodology. Dose calculations consider the public's actual eating, drinking and living habits, as obtained from survey data. Critical Group Dose is expressed in microsieverts (μSv), an international unit of radiation dose measurement.

Plant design incorporates multiple systems to minimize releases such as air dryers to remove tritium vapour from the air, and filters to remove particulate matter and iodine. Operating procedures also protect the health of employees and the public.

The operation and maintenance of OPG's nuclear reactors release very low levels of radioactivity. In 2011, the Critical Group Dose

calculated for Pickering GS and Darlington GS were 0.9 and 0.6 μSv , respectively. These doses are substantially below the legal limit of 1,000 μSv per year set by the Federal Government. By comparison, Canadians receive a total of about 1800 μSv per year from naturally occurring radiation, depending on where they live. (source: Radiation and Health in Durham Region 2007)



▲ Solar-powered site boundary radiation monitor.

Ozone Depleting Substances

Over the past several years, OPG has been phasing out our use and storage of ozone-depleting substances such as R-11 and R-12 chlorofluorocarbon (CFC) refrigerants to comply with provincial regulation. OPG currently has two nuclear-safety related R-11 chillers which are federally regulated. These are still in operation and will be phased out in the fall of 2012, along with their associated inventory of spare refrigerant, ahead of the Jan. 1, 2015 phase-out date mandated by the Federal Halon Regulations.

Climate Change

OPG has a variety of initiatives to address climate change mitigation and adaptation.

Mitigation

By the end of 2014, OPG will no longer use coal fuel. Coal plant closures in Ontario will significantly contribute to the reduction of greenhouse gases (GHG). In 2011, CO₂ emissions were 85 per cent less than in 2007. This gross emission is somewhat variable depending on demand but the upper threshold until 2014 will be limited to 11.5 Tg.

Vegetation naturally sequesters carbon dioxide thereby helping to mitigate global warming. Since 2000, OPG has planted close to five million native trees and shrubs on over 2,400 hectares. The ability of vegetation to sequester CO₂ varies, therefore OPG does not attempt to quantify the offset.

Adaptation to Climate Change

It is recognized that climate change could have far reaching effects on Ontario's watersheds. Energy production is very sensitive to the amount, timing, and geographical pattern of precipitation (supply side), as well as temperature (demand side). Changes in river flows and reservoir levels may have a direct impact on how much and when hydroelectric generation can be produced. The challenge remains to gain understanding of long-term climatic trends in order to understand the potential impacts to our operations, and to assess potential new development. Seasonal variability of precipitation, temperature, evaporation, lake levels and their divergences from normal ranges are the key elements of interest for OPG.

OPG has been an affiliated member of the Ouranos consortium since 2009. The consortium pools the expertise and disciplines of numerous researchers to advance the understanding of climate change. OPG is also funding the development of climate change models by the University of Waterloo. The models are to be available by 2012.

OPG Greenhouse Gas Emissions - 2011 Fast Facts

- ▶ Combustion of fuels in thermal stations - 4,366,785 tonnes CO₂.
- ▶ Vehicle mileage - 21,160,957 km = 5,885 tonnes CO₂.
- ▶ SF₆ - 11.96 kg emitted = 285.5 tonnes CO₂ equivalent.

Further, OPG actively participates with stakeholders to address risks and opportunities posed by climate change; examples include WeatherWise (GTA), and the Durham Region Roundtable on climate change. These groups are working with leading climatologists and risk experts to characterize the projected future condition and ensure that programs are in place to reduce risk to within acceptable tolerances.

Electric Vehicles Program

Electric vehicles (EVs) are a reliable transportation choice and can play an important part in mitigating climate change. By supporting the widespread adoption of EVs, OPG's goal is to maximize the environmental and economic benefits that they bring. Given that Ontario's baseload generation is virtually free of GHG emissions, EVs have the potential to make a significant contribution to Ontario's GHG emission reduction goals.

Electrification of the transportation sector and charging on clean generation like nuclear and hydro is a key strategy to reducing Ontario's emissions and mitigating climate change.

The introduction of EVs is consistent with OPG's commitment to Sustainable Development.

During use on battery power, electrically operated vehicles;

- do not emit GHG, or other pollutants which may cause respiratory diseases.
- do not consume petroleum, thereby conserving the resource.



▼ Electric vehicles being introduced to OPG's fleet.

It is envisioned that commuters will typically charge their vehicles at night during off-peak hours. In Ontario, the benefits of charging “off peak” are twofold: electricity is substantially less expensive, and charging during off-peak hours would utilize surplus baseload electricity from hydroelectric and nuclear stations. A significant advantage of this surplus electricity is that power produced at nuclear facilities is virtually free of smog and GHG - causing emissions, while power produced at hydroelectric facilities is both clean and renewable. This underscores the environmental benefit of electric vehicles.

OPG has several electric vehicles in our fleet and has installed over a dozen charging stations as part of an expanding network.

Since 2008, OPG has been working with a wide variety of stakeholders and partners to help plan and prepare for the introduction of EVs. OPG and the Ontario Centres for Excellence have been instrumental in the development of Plug'nDrive, (www.plugndriveontario.ca) a partnership that has grown to over 35 participants from Ontario’s industry, government, academia and environmental groups. OPG has partnered with several other organizations to advance the introduction of electric vehicles.

Partner organizations are gaining experience in the technical, practical, and economic aspects of electric vehicles and are working cooperatively to learn and address challenges.



▲ OPG’s partners in supporting the adoption of electric vehicles.

WATER

Water Fast Facts

- ▶ OPG generating stations use water principally in two ways:
 - Flows through hydroelectric turbines 483, 200 million m³/year.
 - Cooling and service water (non consumptive) at thermal and nuclear stations 10,829 million m³/year.

Zebra and Quagga Mussels

Zebra and Quagga mussels are invasive species introduced into the Great Lakes in the late 1980s. These invasive mussels have not only had a great environmental impact on the Great Lakes ecosystem, but if unmanaged, the mussels can restrict flow in station cooling water pipe work causing operational issues. For years, chlorine has been the only reliable means of effectively treating cooling piping systems for Zebra and Quagga mussels for industry drawing water from the Great Lakes.

Consistent with our commitment to reduce pollution and continually improve, OPG initiated trials of new environmentally friendly bacterial control methods toxic only to Zebra and Quagga mussels in 2009. In 2011, plant-wide effectiveness testing yielded mortality effectiveness of 62 per cent, an 84 per cent improvement over the first full-scale treatment in 2009. The trial work will help refine the process to a point where it can become a viable treatment alternative to chlorine. Less chlorine means less exposure for employees and reduced emissions to the environment.

OPG is working closely with the Ministry of the Environment to simplify permitting requirements, which could make use of this green alternative even more appealing to other industries.



▲ Cross-section view of water pipe blocked by mussels.

As part of an improvement effort to mitigate Pickering Nuclear's impact on fish, OPG installed a full coverage net barrier around plant water intakes.



▲ Divers prepare to inspect barrier net at Pickering Nuclear Station.

Fish

OPG's facilities can impact fish in a variety of ways:

- The volume of water required for cooling creates significant currents that can result in fish mortality through impingement and entrainment.
- Fish migration can be inhibited by dams and fish can be drawn through hydroelectric turbines.
- Heated discharge from stations can alter habitat.

Any or all of these can negatively impact on fish either through direct mortality or habitat alteration. OPG has a number of programs focused on eliminating, mitigating or offsetting the impacts.

Aquatic Thermal Plume - Pickering

In response to a request from the Canadian Nuclear Safety Commission (CNSC) to monitor the effects of the thermal plume on Lake Ontario round whitefish spawning habitat, temperatures were monitored in the condenser cooling water discharge and at two reference locations, outside the plume, in the winters of 2009-2010 and 2010-2011. In general, the temperatures in the plume were warmer and experienced more temperature exceedances than at the reference locations. The results were within the bounds predicted in the Environmental Assessment and further mitigation was not required. Despite this, OPG agreed to complete a review of risk mitigation options. This review concluded that the plume effect is only evident in the warmest winters and therefore little benefit would be realized from implementing any technological or operational mitigation option.

Mitigating Impingement/Entrainment of Fish at Pickering

As part of an improvement effort to mitigate Pickering Nuclear's impact on fish, and in response to a CNSC expectation that Pickering implement effective fish impingement and entrainment mitigation measures, OPG installed a full coverage net barrier around the intake groyne. After the second full cycle of operation, the fish protection net has again bettered the goal of reducing impingement by 80 per cent. The CNSC has concluded that the barrier net is an effective fish deterrent system.

The CNSC also directed OPG to reduce the impact on the Brown Bullhead and Northern Pike. The fish barrier net achieved over 99 per cent reduction of impingement of the Brown Bullhead, but had little impact on Northern Pike.

To compensate for the impact on Northern Pike, OPG, in partnership with the Toronto Region Conservation Authority, completed a habitat restoration in Duffin's Creek Marsh in 2011 to improve the spawning habitat. In addition, the work offers benefit for other fish species, provides habitat for local reptiles and amphibians, and provides foraging and resting opportunities for migratory birds.

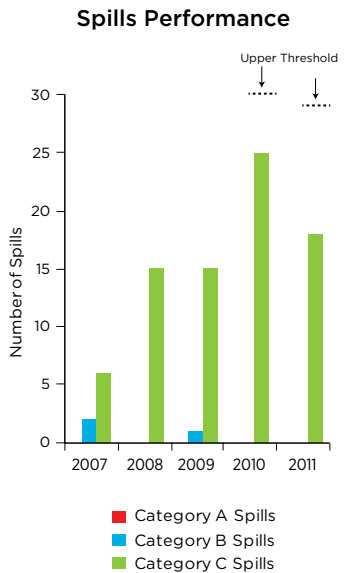
Development of Stewardship Agreements for Species at Risk in Ontario

OPG Hydroelectric Environment staff in collaboration with the Ministry of Natural Resources continue to work toward the development of numerous waterpower stewardship agreements for Species at Risk in Ontario. The voluntary agreements, specifically designed for American Eel and Lake Sturgeon, can include any suite of measures including habitat creation and protection, operational flow alterations, stocking programs and/or facilitating passage around dams and generating stations. These measures will include monitoring components to ensure their effectiveness and will contribute to improving the environmental performance of many OPG hydroelectric facilities as well as supporting the recovery of these iconic species in Ontario and across Canada.

Spills

The classification of spills is based on their potential impact on the environment: Category A spills are considered as very serious due to the scope of injury, damage, health effects or safety impairment that occurs or may occur. Category B are considered as serious spills - typically they are more localized in terms of injury or damage. Category C spills are reportable but considered less serious than A or B. These categories mirror the Ontario Ministry of the Environment (MOE) regulations.

In 2011, OPG met our target of zero category A & B spills, and bettered the target of 29 for Category C. Our Category C spills decreased from 25 in 2010, to 18 in 2011 consistent with our goal of continual improvement. OPG's 2012 spills targets and goals remain unchanged.



Better than threshold



Trend Variable

Land



Land Fast Facts

- ▶ The total extent of OPG's land holdings is approximately 177,455 hectares.
- ▶ Work continues on a Deep Geologic Repository (DGR) for Low and Intermediate Level Radioactive Waste.

Waste

Nuclear operations produce Low and Intermediate Level Radioactive Waste (LILRW). In 2011, 2,943 m³ of LILRW was produced. This was better than the target of 3,068 by four per cent, but 0.9 per cent greater than 2010. The increase can be attributed largely to the increased volume of dryer desiccant generated as a result of efforts to reduce tritium emissions.

OPG's objective is to reduce the impact of radioactive waste on the environment to the lowest achievable levels that are consistent with the social and economic drivers. By reducing the volume of LILRW produced, the environmental impact costs of transportation, storage and disposal are all reduced.

Performance targets have been set progressively lower to drive performance. Compared to 2005, production has decreased approximately 49 per cent, translating to annual savings of over \$8 million. Minor year-to-year fluctuations can often be attributed to increased maintenance associated with unit outages.



▲ OPG manages radioactive waste in an environmentally responsible and safe manner.



Waste Fast Facts

- ▶ Hazardous wastes generated: solids = 339 tonnes, liquids = 1,458 kilolitres.
- ▶ Low and intermediate radioactive waste = 2,943 m³.
- ▶ Ash and gypsum = 209,379 tonnes (87 per cent) diverted from landfill.
- ▶ Scrap metal recovery excluding IT components = 2,401 tonnes, generating a revenue of \$1,322,000.
- ▶ Scrap IT components recovery = 126.1 tonnes, generating a revenue of \$31,700.

Work continued on a Deep Geologic Repository for LILRW radioactive waste.

"After... thorough scientific studies on everything from our geology to our environment, the Environmental Impact Statement has confirmed that the DGR can be built with an incredibly high degree of safety for this generation and the ones that follow."

Kincardine Mayor Larry Kraemer

Ash and Gypsum Diversion

By-products of coal combustion include fly ash, bottom ash and gypsum. OPG has developed commercial markets rather than disposing of these by-products as "waste." Fly ash is used in cement and concrete manufacturing, bottom ash is used as an aggregate replacement, and gypsum is used in wallboard manufacturing. In 2011, OPG utilized 87 per cent of our total ash and gypsum production, or 209,379 tonnes out of a total production of 241,140 tonnes. Solid combustion by-products that are not used are sent to a recoverable landfill where they may be subsequently used in the future to meet market needs.

Land Assessment and Remediation Fast Facts

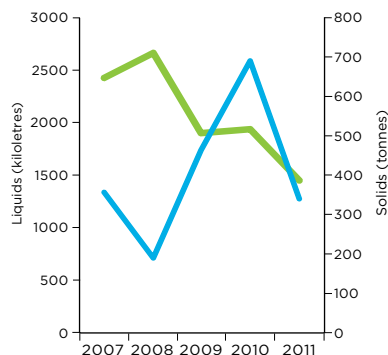
- ▶ Site Assessment Plan filed with the Ministry of Environment in 1998 and each year thereafter.
- ▶ 50 high priority sites with known or potential contamination were identified in 1998.
- ▶ All of the required assessments were completed and the Director's Order closed out by the Ministry of Environment in March 2004.
- ▶ Assessment of medium and low priority sites continues under OPG's voluntary site assessment program.
- ▶ Remediation of 42 sites has been completed.
- ▶ Remediation of all medium and low priority sites target completion - end of 2013.

Land Assessment and Remediation

In 1997, in response to a Director's Order from the Ministry of the Environment, Ontario Hydro introduced a program to assess and remediate historical contamination on properties occupied by our generating facilities. The contaminants of concern were fuel oil, transformer oil, waste lubricants and tritium.

OPG estimates the present value of assessment and our remediation plan for contaminated sites at approximately \$10 million over the next several years and this amount is fully reserved under the OPG environmental provisions.

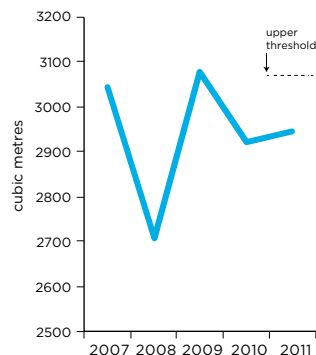
Hazardous Waste



Liquids Solids

Trend Improving Trend Variable

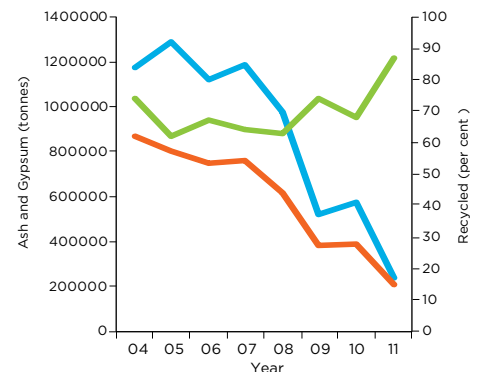
LILRW Waste



Low & Intermediate Level Radioactive Waste Produced

Better than threshold Trend Variable

Ash and Gypsum Diversion



Ash and Gypsum Produced (tonnes)
Ash and Gypsum Recycled (tonnes)
Per cent Recycled

Trend Improving

PCB Management

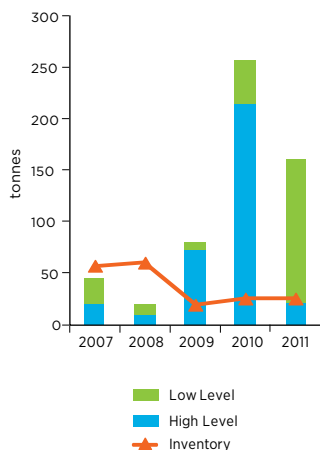
PCB manufacture has been prohibited in North America since 1977. Prior to this prohibition, PCBs were widely used for a number of industrial applications, including as a coolant and insulating fluid in electrical equipment.

OPG successfully eliminated all of our remaining in-service, high-level (>500 mg/kg) PCB equipment (excluding PCB lighting ballasts) prior to the end of 2009, as required by regulation.

New Federal PCB regulations, enacted in September 2008, created an additional class of PCB equipment, with very low levels of PCB (2 - <50 mg/kg) not previously regulated or included in OPG's inventory. This change has increased OPG's total in-service PCB equipment inventory to approximately 7,800 tonnes (comprising approximately two million litres of oil and approximately six thousand tonnes of equipment). There is no mandated phase-out date for this equipment, but there are controls on its eventual disposal when removed from service.

In late 2010, OPG identified several thousand fluorescent light fixtures with PCB ballasts that had been abandoned in place during lighting retrofits in the mid-1990s. This put OPG out of compliance with the PCB regulations. The plan to remove and dispose of these PCB ballasts is well underway, with completion expected by 2014. OPG estimates the cost of this work at approximately \$2 million and this amount is fully reserved under the OPG environmental and decommissioning provisions.

PCB Materials for Destruction



PCB Management Fast Facts

- ▶ In 2011, OPG shipped approximately 161 tonnes of high-level (ballasts) and low-level PCB waste for destruction.
- ▶ As of December 2011, OPG's inventory of low-level PCB waste and in-service PCB equipment (excluding very low level PCB) was 25 tonnes, as compared to 3,427 tonnes in 1994.

Greening OPG's Supply Chain

OPG recognizes that a significant per cent of our environmental footprint can occur in our supply chain. As such the supply chain represents an opportunity to demonstrate our commitment to social responsibility, and to strengthen relationships and improve financial, social and environmental performance.

OPG's commitment to greening our supply chain is consistent with our environmental policy and as directed by our Purchasing and Asset Disposal Policy. Procurement staff are directed to ensure that environmental considerations are evaluated in the purchasing decision. To facilitate the evaluation process an innovative methodology was developed in partnership with Ryerson University. The evaluation tool is based on shared values as opposed to strict quantitative performance. The methodology is objective and will create repeatable results. Further it uses readily available data and can be readily modified to keep pace with evolving expectations.



▲ Supply chains have significant potential to contribute to organizations sustainable development.

Biodiversity and Habitat Stewardship

The conservation of biodiversity is an integral part of OPG's sustainable development efforts. Leadership on the national and international stages, environmental management systems, stakeholders' endorsements, and a history of financial and technical support for initiatives demonstrate this commitment. The aim of OPG's Biodiversity program is to demonstrate that OPG can co-exist with nature without causing or contributing to the long-term decline of species or the habitats upon which they depend, and to reduce the adverse effects of our operations, while enhancing the resiliency of the ecosystems in which OPG operates.

OPG's biodiversity initiatives are designed to implement the "4 Rs" of biodiversity:

- **RETAIN** what is ecologically significant.
- **RESTORE** habitats which have been degraded.
- **REPLACE** habitats which have been destroyed, where ecologically and economically feasible.
- **RECOVER** the habitats and populations of species that are at risk.

Mainstreaming Biodiversity

Biodiversity is at risk globally, nationally and locally. Emerging international, national and provincial biodiversity initiatives emphasize the need to develop a holistic and integrated approach for addressing biodiversity challenges and provide direction.

At OPG, our Biodiversity programs and conservation efforts demonstrate that industry can and does have a clear role to play in conserving Ontario's biodiversity. In May 2011, OPG, with the Canadian Business and Biodiversity Council, hosted a "Business and Biodiversity" workshop which brought together approximately 120 participants from business, government and environmental organizations. The workshop profiled OPG's work within the broader context of both the need and value of integrating biodiversity into business operations. OPG has a long-standing commitment to biodiversity and is recognized as a biodiversity leader.



◀ Jon K. Grant, former President and CEO of Quaker Oats (Canada), speaks at OPG's "Business and Biodiversity" workshop in May 2011 regarding the need and value of integrating biodiversity into business operations.

OPG's Site Biodiversity Program Examples



◀ Nanticoke Generating Station hosts annual nest box cleanout with local Scouts. Nanticoke has over 100 swallow and bluebird boxes on site.

2011 was the 8th year of tree planting on the Atikokan site. Approximately 2,000 native pine and spruce trees have been planted each year on the sand flats adjacent to the Lower Basin bringing the total to 16,000. ▼

▶ The Ontario Forestry Association's Envirothon is an interactive educational program where teams compete with each other on their knowledge of issues including aquatics, soils, forestry and wildlife. OPG hosts Envirothon.



◀ Collaborating with the Ministry of Natural Resources, the Ontario Federation of Anglers and Hunters and other organizations, OPG is the lead partner in the Bring Back the Salmon program. The program is designed to help restore the Atlantic Salmon population in Lake Ontario by 2020.

▶ OPG staff partnered with the Canadian Peregrine Foundation and the Ministry of Natural Resources to band Peregrine Falcon chicks to provide researchers with information of migration patterns, reproduction cycles and habitat requirements.



In an effort to provide high quality aquatic habitat for amphibians, waterfowl and other wetland species, there are currently eight ponds in various stages of development on the Darlington site. ▼



◀ Pickering Nuclear partnered with Environmental Stewardship Pickering, and the City of Pickering to host the Bicentennial Butterfly Festival in celebration of the City of Pickering's 200th anniversary.

▶ The only two populations of Allegheny Mountain Dusky Salamander in Ontario occur on land OPG has leased from the Niagara Parks Commission at the Sir Adam Beck Generating Station complex. OPG has partnered with the local Ministry of Natural Resources to obtain information on these two populations of Dusky Salamanders.



Wildlife Habitat Council Recognizes OPG's Commitment to Biodiversity

The Wildlife Habitat Council's certification process helps to keep our site biodiversity programs dynamic to ensure continual improvement. OPG once again received recognition from the Wildlife Habitat Council for ongoing biodiversity programs at our sites.

In 2011:

- Darlington was awarded the **Corporate Habitat of the Year Award** which recognizes one certified *Wildlife at Work* program each year for outstanding environmental stewardship and voluntary employee efforts.
- Niagara Plant Group was awarded the **Corporate Lands for Learning of the Year Award** for outstanding environmental education, stewardship and voluntary employee efforts.



▲ OPG employees from Darlington Nuclear and the Niagara Plant Group received awards from the Wildlife Habitat Council for outstanding environmental education, stewardship and voluntary employee efforts.

OPG's ISO 14001 and Wildlife Habitat Council Certifications

OPG Location		Wildlife Habitat Council Certification		
		ISO 14001 Certification ¹	Wildlife At Work ²	Corporate Lands for Learning ³
Hydroelectric	Central Hydro PG (Trent & Moon /Muskoka Rivers)	✓	✓	
	Niagara Plant Group	✓	✓	✓
	Northeast Plant Group	✓	✓	
	Northwest Plant Group (Kakabeka Falls Generating Station)	✓	✓	
	Ottawa/Madawaska River Systems	✓	✓	
	R.H. Saunders Generating Station	✓	✓	✓
Nuclear	Pickering Generating Station	✓	✓	✓
	Darlington Generating Station	✓	✓	✓
	Nuclear Supply Chain	✓		
	Western Waste Management Facility	✓	✓	
Thermal	Atikokan Generating Station	✓	✓	
	Lambton Generating Station	✓	✓	
	Lennox Generating Station	✓	✓	
	Nanticoke Generating Station	✓	✓	✓
	Thunder Bay Generating Station	✓	✓	✓
Corporate	Corporate Head Office	✓		

1. Environmental Management System

2. The Wildlife Habitat Council's Wildlife at Work program provides a structure for corporate-driven cooperative efforts between management, employees and community members to create, conserve and restore wildlife habitats on corporate lands.

3. The Wildlife Habitat Council's Corporate Lands for Learning certified corporate sites offer experiential, place-based learning opportunities by using their habitat as a tool for teaching to explore ecological concepts and the human role in conservation.

OPG's Corporate Biodiversity Program

We recognize that our effects on nature do not stop at the boundaries of our plants, nor do our efforts to protect and restore nature. OPG's program is holistic, comprehensive, integrated and innovative. We have invested in significant habitat protection and restoration efforts in the communities where we operate and in strategic locations across southern Ontario, including some of the most biologically imperilled regions in Canada.

OPG's biodiversity and extensive tree planting program is innovative. It links the need to sequester carbon, thereby helping to mitigate climate change, with habitat restoration for forest wildlife at risk in southern Ontario's highly fragmented landscapes.

We have worked extensively with numerous planting and conservation authority partners within Ontario and demonstrated leadership in advancing biodiversity in business in Ontario, across Canada and within North America.

OPG, through our conservation partners, planted close to 500,000 native trees and shrubs in 2011. This brings the total plantings to nearly five million native trees and shrubs on over 2,400 hectares of ecologically significant lands since 2000.

Our plantings are targeted to expand key core forested areas and connect woodland patches to help promote the recovery of wildlife that



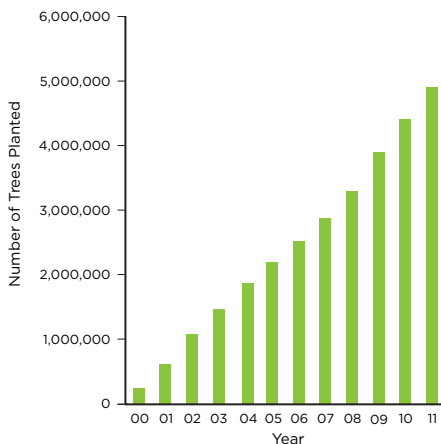
▲ Kettle Creek tree planting partnership in St. Thomas.

are at risk in the heavily fragmented landscapes of southern Ontario. Sites are identified using regional scales natural heritage systems such as the Carolinian Canada's Coalition's "Big Picture", or a more local refinement thereof. The use of such systems helps us to achieve the greatest ecological and social value for our investment dollar.

This cumulative effort also addresses both climate change adaptation and mitigation by enhancing the resiliency of woodland ecosystems to withstand the effects of climate change, while naturally sequestering carbon dioxide thereby helping to mitigate global warming.

OPG has continued to expand our public outreach program on biodiversity. The program supported environmental events that made it fun and easy for families across Ontario to get involved in conservation efforts. Numerous events were undertaken in 2011 across Ontario in partnership with organizations that included: LEAF - Local Enhancement and Appreciation of Forests; Trees Ontario; Ontario Nature; Bruce Trail Conservancy; Earth Rangers; and Rouge Park.

OPG Cumulative Tree Planting



SOCIAL For OPG, social responsibility is more than a commitment. Our programs demonstrate our core values and our commitment to giving back to our communities, to fostering positive relationships, to diversity and equity, and to safety and wellness.



▲ Tuesdays On the Trail Program - OPG Nuclear

Social Contents	
Core Values	25
Safety	26
Wellness	28
Outreach and Recruitment	28
Employment Diversity	29
First Nations and Métis	30
Capacity Building	32
Power of Community	33

Core Values

“When we follow the Code of Business Conduct, we’re protecting OPG’s reputation as an ethical company and contributing to a respectful work environment.”

Barb Keenan, SVP People and Culture and Chief Ethics Officer

OPG’s Code of Business Conduct sets forth the principles of integrity, excellence and citizenship that guide our decisions and actions each and every day. The Code’s values make staff accountable for the way they perform their jobs, the way they interact with one another, and the way

that they represent themselves and the corporation in the communities where they work and live. Performing activities in an honourable and ethical way has and will continue to be what sets OPG apart.

Employee accountabilities are outlined in the Code. Compliance is expected from everyone. OPG’s executive team is accountable for monitoring compliance to the Code and for submitting an Annual Due Diligence Report to the Chief Ethics Officer. All employees receive initial training in the Code, and are required to refresh their training every two years.

Worker Safety

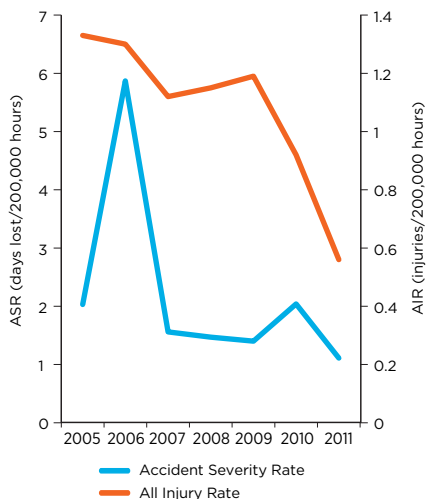
OPG has an uncompromising commitment to safety. Our goal is zero injuries.

OPG is committed to achieving excellent safety performance, striving for continuous improvement and the ultimate goal of zero injuries. Safety is a fundamental value for OPG where a safe work environment is considered good business and where our safety culture is built on each employee taking personal responsibility for their own safety and that of their colleagues.

Safety performance is measured using two primary indicators: Accident Severity Rate (ASR) and All Injury Rate (AIR). We measure ourselves against top quartile safety performance as represented by the Canadian Electricity Association. OPG's safety performance is consistently one of the best amongst Canadian electrical utilities.

In 2011, OPG made progress in reaching our goal of zero injuries with the lowest AIR and ASR in OPG's history with an ASR performance of 1.10 days lost per 200,000 hours and an AIR of 0.56 injuries per 200,000 hours worked. This reduction in injuries, coupled with the number of sites reaching major safety milestones with no lost time injuries, demonstrates OPG's progress towards reaching the goal of zero workplace injuries. Some notable milestones include Darlington Nuclear achieving over twelve million hours worked (3.5 years), and

Accident Severity and All Injury Rate



Safety Fast Facts

- ▶ Goal is zero injuries.
- ▶ Achieved the best ASR and AIR safety performance ever.
- ▶ ASR of 1.10 days lost per 200,000 hours was 46 per cent better than the 2010 ASR of 2.04.
- ▶ AIR of 0.56 injuries per 200,000 hours was 39 per cent better than the 2010 AIR of 0.92.
- ▶ 42 per cent fewer injuries in 2011 than in 2010.
- ▶ Darlington GS hosted the Nuclear Industrial Safety and Health Association Conference.
- ▶ All employees and workplaces are represented by Joint Health and Safety Committees (JHSC).
- ▶ Over 250 employees across OPG participated as JHSC members.

Nanticoke Thermal achieving over three million hours worked (2.5 years) without a lost time injury.

While OPG is proud of our successes, we recognize that achievement of our ultimate goal of zero injuries is a continuous journey as we further improve our safety culture and safety management systems.

Through the operation of these safety management systems, OPG continually assesses our safety risks and creates focused plans for managing and reducing them.

Risk Reduction Priorities. In 2011, corporate-wide risk reduction priorities focused on improving falling object prevention programs by capitalizing on lessons learned from past events. These improvement initiatives resulted in over 25 per cent reduction in falling object incidents in 2011 versus 2010. Another priority initiative that will continue into 2012 is improving the application of work protection (lockout/tagout) through simplification of processes. While improvement has been seen in reducing all injuries including musculoskeletal disorders, OPG remains focused on reaching our goal of zero injuries.



▲ No job is too important to not take the time to do it safely.

Safety is a fundamental value for OPG where a safe work environment is considered good business and where our safety culture is built on each employee taking personal responsibility for their own safety and that of their colleagues.



Partnerships with our unions. OPG believes that partnership with our unions is an important element of our strong safety culture based on our common goal for a safer workplace. In October 2011, with Joint Health and Safety Committees (JHSC) representing all employees and workplaces in OPG, over 200 JHSC members and those who support them from across the province met in a joint forum to discuss their roles regarding new regulatory requirements and to share lessons learned for common health and safety risks to implement at their respective sites.

Young Worker Safety. OPG extends our commitment to safety into the communities where we operate by participating in initiatives to raise awareness with young workers on the importance of workplace safety. In 2011, OPG partnered with our unions to develop a Young Worker Safety strategy for future directions in this area. As part of this effort, OPG executives partnered with Young Worker Safety advocate Rob Ellis to discuss workplace safety with students at Ontario high schools.

Contractor Safety. OPG expects contractors to contribute positively to our strong safety culture. Every year since 2005, OPG's Construction Contractor All Injury Rate (AIR) has compared favourably against the Ontario construction industry as measured by the Infrastructure Health and Safety Association of Ontario. OPG's construction contractors have not experienced a lost time accident while working on our sites since 2008, and in 2011 their AIR of 2.23 injuries per 200,000 hours worked was 67 per cent better than that of the Ontario construction industry.

Water Safety - Stay Clear, Stay Safe
 OPG's owns and safely operates more than 240 dams and 65 hydroelectric generating stations on 24 river systems throughout the Province of Ontario. Most of these facilities are remotely controlled. As demand for electricity rises and falls throughout each day, frequent and rapid changes in water levels and flows around our facilities occur. These changes that can affect safety can occur quickly and without warning.

To help ensure public safety around OPG hydro sites, OPG staff work closely with partners in site communities. Safety messages are broadly communicated to the public on television and radio, online, and in newspaper and magazine advertisements, as well as through brochures and DVDs. For many years, OPG has had a public water safety outreach program and each year makes improvements to the program. To order a free copy of our water safety DVD, e-mail your mailing address to watersafety@opg.com.



◀ OPG's Kristi Tarabocchia and Nishnawbe-Aski Police Service Sergeant Jackie George display water safety kits in Thunder Bay.

Employee Wellness

OPG believes that employees who maintain a good level of fitness and overall health are more likely to be fit for duty and will be more productive and engaged. Consistent with OPG's Health and Safety Policy, we specifically ask our employees to be accountable for maintaining or taking positive steps to achieve a state of health that is consistent with the demands of their occupation. To support this policy, Wellness provides a number of programs that support employees. Program details are provided below.

Disability Management

The objective of OPG's disability management program is the safe and timely return to work of ill or injured employees with the goal of reducing the length of major absences and providing support to employees during both their absence and their re-integration to the workplace. The on-site Employee Wellness team comprised of occupational health nurses and physicians contribute to this objective by educating employees about their health conditions, providing advice and assistance to manage their health and achieve optimal productivity in the workplace. This program provides income protection benefits and supports early and safe return to work principles by accommodating employees who require modified duties and/or hours to return to work.

WSIB Management

Every year about 200 workers make a claim to the Workplace Safety and Insurance Board for a work-related injury. OPG offers a variety of accommodations to workers who are disabled as a result of their injury. The accommodation options may include such strategies as working reduced hours or at more restricted range duties or even a temporary move to a different job. The employee benefits from the opportunity to recover while remaining active in suitable work, and OPG benefits by reducing insurance costs and retaining the employee's employment contribution.

Long-term Disability

Returning to work from a prolonged absence can be very difficult. OPG provides additional support to assist those employees who are attempting a return to the workplace from long-term disability. In 2011, 11 employees successfully returned to regular duty from the long-term disability plan. In partnership with our long-term disability insurance carrier, return to work barriers are identified; innovative and supportive rehabilitation approaches are then designed to assist the employee's return to gainful employment. A corporate rehabilitation fund is available to support these return to work programs, reduce the potential budget barriers that may affect local support for return to work initiatives and aid OPG in meeting our duty to accommodate.

Educational Outreach and Recruitment

While there has been a decline in the number of full-time job opportunities available in 2011, OPG does engage in outreach activity to promote student opportunities and a general awareness of careers in the electricity industry. OPG engages in the following activities to support our recruitment, diversity/employment equity, and corporate citizenship objectives:

- **Classroom visits/information sessions** to enhance the students' understanding of our career opportunities and the essential academic requirements and qualifications they must achieve in order to pursue them;
- **Presented awards/scholarships** at the secondary and post secondary levels;

- ▶ OPG invests \$5 million in Durham College and University of Ontario Institute of Technology (UOIT) in a five year collaboration of education and training.



OPG was named as one of Canada's Best 50 Corporate Citizens by Corporate Knights. "This is a testimony to our strong corporate social responsibility. This ranking [based on environmental, social and governance indicators] helps to raise the bar for all companies engaged in corporate citizenship."

Bruce Boland, SVP Commercial Operations



▲ **John Wesley Beaver Student Award Recipients:** (Pictured here with OPG's Tom Mitchell are 2011 award recipients Kaegan Oakes Walsh (left) and Amsey Eliza Rose Maracle); OPG provides two awards annually equivalent to about one year's tuition to foster Aboriginal students enrolled in post-secondary study. The award is administered by OPG's Native Circle.

- **Participated in Career Fairs;**
- **Acted as OPG ambassadors** at various secondary and post-secondary program and curriculum-related events to share how education relates to and could translate to various career paths at OPG;
- **Partnered with various colleges and universities** through participation in curriculum advisory committees and provision of financial contributions to support program and curriculum development;
- **Participated in various conferences,** speakers' panels, networking events targeting post-secondary students, experienced professionals, and members of employment equity designated groups.

In addressing each of our audiences, messaging encourages students to stay in school and pursue studies in maths and sciences which are essential to many of OPG's career paths.

Websites of interest: www.opg.com/LearningZone and www.mypowercareer.com

Financial Support for Academia

OPG's support of academia and research and development demonstrates our continued commitment to: providing economic value to the communities and regions in which we operate; developing a supply of highly qualified personnel to meet future workforce demands; supporting and funding nuclear research in universities; and creating a respected pool of university-based expertise for independent industry and public consultation, ensuring a pool of highly qualified individuals is available.

OPG is a founding member of the University Network for Excellence in Nuclear Engineering (UNENE). OPG has committed \$5 million to fund the UNENE program over five years.

OPG has committed \$5 million to Durham College and the University of Ontario Institute of Technology over the next five years. This follows a \$10 million investment into the two institutions from the organization from 2005 to 2010. This is a strategic investment aimed at nurturing talent for the future.

Diversity and Employment Equity

OPG embraces diversity in its broadest sense, valuing all human differences that make individuals unique. We strive to create a workforce that reflects the diverse populations of the communities in which we operate, in an environment that is respectful and inclusive of all employees. In 2011, OPG updated our five-year Employment Equity Plan. The plan has been developed through consultation with key stakeholders in the company including employees who have self-identified as being part of one or more of the designated groups. In addition, OPG has rolled out a plan to achieve compliance with the Accessibility for Ontarians with Disabilities Act. Much of this involved training staff on how to deal with members of the public that have a disability.

OPG also undertook a review of the structure and mandate of the Corporate Tripartite Diversity Committee which is comprised of representatives from Management, the Society of Energy Professionals, and the Power Workers' Union. The revised terms now



Looking Ahead

In 2012 OPG will continue to explore ways to evolve our recruitment practices to be nimble and respond to ever-changing workforce needs. In addition, work will be undertaken to redefine the role of diversity at OPG, and better align it to organizational changes and opportunities.

2012 will also see a greater focus on internal talent management and succession planning as more leaders retire from OPG. A significant focus will be on long-term development planning for the future leadership talent at OPG.

call for a better connection to overall people strategies in the company, with direct reporting to the CEO and union presidents on diversity initiatives.

In addition, a new function was enabled in our online Applicant Tracking Tool to allow those applying online for job opportunities at OPG to self-identify as being part of an employment equity designated group.

Finally, with the successful roll out of Diversity and Human Rights training to supervisors in our Non-Nuclear business in 2010, efforts were undertaken to roll out the same training to nuclear supervisors. This achieves an overall consistent training program on this topic for the entire company.

Relationships with First Nations and Métis Communities

OPG has a dedicated First Nations and Métis Division which is directed by a Board level policy. On August 24, 2011, OPG's existing Aboriginal Relations Policy was renamed the First Nation and Métis Relations Policy to better reflect the environment in which OPG operates. This policy sets out OPG's objectives for respecting the rights and interests, and developing and maintaining mutually beneficial relationships and partnerships with First Nations and Métis communities located near our current and future operations. The policy also includes a requirement for OPG to engage in community relations and outreach, and to provide capacity building support, including employment and business contracting opportunities.

Employment Equity Occupational Group	Designated Groups	Representation as of Dec 31, 2011	
		Numbers	Percentage
Senior Managers e.g. Chairman, President and CEO, Executive VPs and Senior VPs	Women	1	5.0%
	Visible Minorities	1	5.0%
	Aboriginal Peoples	0	0%
	People with Disabilities	0	0%
Middle and other Managers e.g. VP, Directors, Section/Project/Shift Managers, Managers, project leaders etc.	Women	225	18.4%
	Visible Minorities	210	17.1%
	Aboriginal Peoples	8	0.7%
	People with Disabilities	23	1.9%

Representation of Designated Groups by Employment Equity Occupational Groups as of Dec. 31, 2011

Note: Employment equity information on our Board of Directors is not collected since they are not OPG employees.

» First Nations and Métis Communities Fast Facts

In 2011, OPG continued to develop relationships with First Nations and Métis communities:

- ▶ worked with our potential partner, Taykwa Tagamou Nation, on the definition phase of the New Post Creek Hydroelectric Development Project.
- ▶ shared information with the Métis on the proposed Little Jackfish Hydro Development Project. Going forward, all participants will work to define and assess the environmental, social, cultural, economic and long-term sustainability of the proposed development.
- ▶ settled a past grievance with Wabaseemoong First Nations.
- ▶ worked with Saugeen Ojibway First Nations on the Deep Geologic Repository (DGR) project.
- ▶ engaged the Métis Nation of Ontario to do a Traditional Knowledge study for the Georgian Bay Traditional Territory in support of the DGR project.
- ▶ shared information with Williams Treaty First Nations on Nuclear Operations and Darlington Refurbishment.
- ▶ sharing information with Mississauga, Chippewa and Mohawk First Nations as well as Métis organizations regarding the Darlington Nuclear New Build.
- ▶ supported 89 Aboriginal related projects through the OPG Corporate Citizenship Program in 2011.



▲ Taykwa Tagamou Nation Chief Linda Job accepts a framed copy of a formal apology from OPG Chairman Jake Epp.

The relationship between OPG and First Nations and Métis communities in Ontario is founded on respect for their languages, customs and cultural institutions. Further, OPG is committed to reaching a mutually satisfactory resolution of grievances with respect to past development. OPG continues to pursue prospective economic partnerships with First Nations and Métis communities that will provide for long-term commercial arrangements. Underscoring this work is OPG's acknowledgement of the inherent Aboriginal and treaty rights of all First Nations and Métis communities. This remains an important aspect of the company's development agenda.

OPG continues to work with our partner the Lac Seul First Nation on the Lac Seul/Obishikokaang Waasiganikewigamig Generating Station in Ear Falls. The station is fully operational and is generating revenues for OPG and Lac Seul First Nation.

Work continues on the Lower Mattagami Project with the Moose Cree First Nation through the Amisk-oo-Skow Agreement. Through this agreement, Moose Cree First Nation will have up to a 25 per cent equity share in the project. It includes contracting opportunities, training and employment for First Nation community members. The project also provides benefits to other regional First Nations and Métis communities. This is an important step in a proposed partnership for the development of four generating stations along the Lower Mattagami River.

In Thunder Bay, the First Nations and Métis consultation process in support of the Environmental Compliance Approval application for the Thunder Bay Generating Station (TBGS) natural gas conversion is almost complete. Meetings have been held with the Lakehead/Nipigon/Michipicoten Consultation Committee for Region 2 of the Métis Nation of Ontario and with the Red Sky Independent Métis Nation. No impacts on Aboriginal rights were identified.

Fort William First Nation (FWFN) is the only First Nation in the watershed/airshed of the project. Staff from the TBGS have met twice with them to discuss conversion plans. At previous meetings with FWFN they have been interested in OPG's plans, and have not expressed any concerns. They have expressed an interest to share information on their energy development plans.

Discussions to set the stage for an enhanced relationship have commenced between Lambton Generating Station and the neighbouring community of Bkejwanong Territory (Walpole Island First Nation).

OPG has initiated discussions between Nanticoke and Six Nations of the Grand River Territory regarding conversion to gas.

Capacity building is a major component of the ongoing Peace Building Initiative supported by OPG at Six Nations of the Grand River territory.

Capacity Building

OPG is committed to working with Aboriginal communities to build capacity, and to ensure that potential First Nation and Métis employees, and those working on OPG projects, attain the appropriate skill sets and competencies to enter into meaningful partnerships and employment with OPG. Capacity building is included in every project involving an Aboriginal neighbour or a partner. In certain cases this may entail training to allow an Aboriginal worker to obtain high school equivalencies or participate in apprenticeship programs.

Projects with capacity building components include: Lac Seul, Lower Mattagami, Mattagami Lake Dam, New Post Creek and Little Jackfish.

The Sibi initiative, now in its second year of operation, is a multi-million dollar joint undertaking involving OPG, the federal government and the private sector. Under the program, training-to-employment services are provided to the community members of Moose Cree First Nation, Taykwa Tagamou Nation and Métis people of the Lower Moose River Basin. Its goal is to build on the skill levels and experience of individuals within the partner communities.



▲ Members of the Thunder Bay Métis community share information about education and training requirements for potential future repowering projects and apprenticeship work at OPG.

Working with Stakeholders and Partners at Hydro Operating Facilities

Responsible, effective and efficient use of water requires co-operation, co-ordination and consultation among OPG, other utilities, many different levels of government, and with local communities and other stakeholders. Water levels and flows on international and interprovincial waterways - such as the Niagara River system, the St. Lawrence and Ottawa Rivers, and Lake of the Woods - are regulated by international treaty, or federal, provincial and inter-utility licences, agreements and legislation. OPG is an active participant when authorities overseeing these waterways hold annual public meetings to provide information and identify issues.

Most Ontario watersheds where OPG has hydro facilities are subject to Water Management Plans. Development of these plans is led by Ontario's Ministry of Natural Resources with

active participation by OPG, First Nation communities, conservation authorities, environmental groups, cottager associations and recreational users. Advisory committees meet regularly. Annual public meetings are held and working groups are established to address specific issues. Current information on water systems and flows is provided on OPG's corporate website at www.opg.com/safety/water.

Many of the plants have established community liaison groups with the objective of exchanging ideas with a cross-section of community representatives.

The Power of Community

As a large company and a primary employer in many Ontario communities, OPG takes seriously our responsibility to be a good corporate citizen and neighbour. We believe that good corporate citizenship is directly based on operating our electricity generating facilities in a safe, efficient, productive, and reliable manner. We also believe that a good company gives back to the communities in which it operates, to help improve the quality of life in those communities.

Through the Corporate Citizenship Program (CCP), OPG demonstrates our commitment to the well-being of the "host" communities where it operates. In 2011, OPG, through the CCP, supported over 1,200 small grass-roots charitable and not-for-profit initiatives including student awards. The CCP provides both donation and sponsorship support to community partnerships in the primary CCP focus areas of environment, education and

community. This includes initiatives that are innovative and consistent with the company's commitment to be an engaged and productive member of the community. Ultimately this means ensuring that our contribution to the broader community is consistently positive and contributes value to the community.

OPG's relationship with communities and stakeholders is based on trust, cooperation and mutual respect. As a proud and engaged community member, OPG values this relationship and is committed to preserving and enhancing it. We are also proud of our commitment to encourage and support the important work of our community partners. It is the effort and initiative of these groups and organizations that help make Ontario a great place to live and truly demonstrate the "power of community."

Some examples of the "power of community" partnerships are detailed on pages 34 to 37.

Environment

OPG supports healthy communities and a healthier environment for future generations through innovative environmental initiatives and partnerships that look at solutions. This

▼ Students participate in Environmental Earth Angels' biodiversity field trip at Alex Robertson Park in Pickering.



includes initiatives that focus on wildlife and habitat restoration, naturalization, emissions reduction, biodiversity, recycling and environmental education. In 2011, OPG partnered on 118 grass roots environmental initiatives with organizations such as Environmental Earth Angels, Ducks Unlimited Canada, The St. Lawrence River Institute of Environmental Sciences, EcoSuperior, The Owl Foundation, Valleys 2000, The Canadian Peregrine Foundation, and numerous local Conservation Authorities, Stewardship Councils and Conservation Clubs/Networks.

Education

Education is an important component in the development of strong communities. As an engineering-based company, OPG helps prepare students for future success through a variety of educational programs for primary, secondary and post-secondary levels. Specifically, we focus on programs and student awards that encourage youth to consider careers as future leaders in the energy sector in the fields of engineering, science, technology and trades, business and the environment. In 2011, OPG supported 171 educational partnerships (which included support for over 250 student awards) with educational institutions and organizations such as Science North, Shad Valley, Deep River Science Academy, FIRST Robotics, The National Aboriginal Achievement Foundation (known now as INDSPIRE) and The Learning Partnership. Whether it is participating in engineering and science fairs or programs like Scientists in School, OPG and our employees devote tremendous effort to inspire young people and prepare them to be future leaders.



▲ Students explore the local ecosystem during Environmental Earth Angels Biodiversity Education Program at Central Hydro's Elliott Chute GS property.

The natural environment surrounding OPG's Elliott Chute Generating Station became the outdoor classroom for over 170 local students including students from Alliance Elementary School. In 2011, through support from OPG's Central Hydro Plant Group, Environmental Earth Angels (EEA) was able to bring its Virtual Biodiversity Environmental Education Program to North Bay students. This hands-on ecosystem study program involves post-secondary student mentors who educate and guide students in their exploration of ecosystems at/or near several of OPG's facilities.

Through this program post-secondary students gain valuable outdoor environmental education experience. The program teaches young people about the importance of sustainability and biodiversity in their communities and empowers them with knowledge and the skills to be environmental guardians.

Teachers and students can study these ecosystems online in the classroom and via EEA's website. In 2011, over 60,000 students and teachers across Ontario accessed the EEA virtual biodiversity website. EEA also delivers the program at OPG's Darlington Waterfront Trail and Pickering's Alex Robertson Park. In 2012, EEA will introduce this program to schools in Thunder Bay and Kakabeka Falls.

For more information about Environmental Earth Angels, please visit its website at www.earthangels.ca.



▲ Junior scientists learn how to make a 'Canadarm' using styrofoam cups at a Scientists in School workshop during Pickering Nuclear's March Break Madness activities.

Pickering and Darlington Nuclear Generating Stations provide fun educational programs every March Break for youth in Durham Region. OPG staff, student volunteers and community partners welcome young people to March Break Madness events focused on the environment, science and recreation. Over 8,500 young people participate annually. In 2011, community partner Scientists in School (SiS) presented fun and interactive science based activities for local youth. Pictured above, junior scientists learn from Stan Taylor, Presenter, SiS, how to make a pneumatically-controlled Canadarm using styrofoam cups. Stan's "Celestial Sleuths" SiS workshop was a big hit with the young people during the March Break activities. OPG is a proud supporter of SiS, a leading science education charity dedicated to building a strong foundation of science and innovation among children and youth. SiS brings science to life for children from Kindergarten to Grade 8 through investigative and fun, hands-on, in-class workshops led by real scientists from the community. The workshops heighten students' interest in science, engineering, technology and the environment and help motivate students to continue their education and possibly consider careers in these disciplines. In 2011, with OPG's support, SiS reached 75,000 students in the Regions of Durham and Niagara, and across Haldimand County and Norfolk County.

For more information on Scientists in School, visit www.scientistsinschool.ca.

For more information on OPG's March Break Madness events hosted by Pickering and Darlington stations, please visit our website at www.opg.com/community.

Community

At OPG we believe that being a good corporate citizen includes helping to improve the quality of life for area residents through community initiatives in the areas of health and safety, arts and culture, humanitarian and local causes, and support of youth amateur sports. In 2011, OPG invested in a total of 826 community partnerships, including 151 health and safety initiatives, 228 arts and cultural initiatives, 240 humanitarian and local community causes (which includes support for the United Way, food banks and shelters etc.), and 207 youth amateur sports partnerships. Our community partnerships include the Canadian Red Cross, St. John Ambulance, the Lung Association, the Canadian Cancer Society, The Driftwood Theatre Group, Magnus Theater, Atikokan Entertainment Series, The White Ribbon Campaign, The Niagara Winter Festival of Lights, Fort Henry, Sport for the Disabled, Special Olympics Ontario and numerous local youth amateur sports teams and organizations to name only a few.

- ▶ Canadian pride shines bright during one of several Canada Day events that OPG proudly supports annually across Ontario and that OPG employees participate in.



“No group embraced the GAMES [2011 Winter Games] like the volunteers from OPG. Their past experience from our Durham Games was transferred and expanded ten-fold. Our heartfelt gratitude and appreciation is felt throughout the movement.”

Glenn MacDonell, President, Special Olympics Ontario



▲ 2011 Special Olympics Ontario Winter Games in Thunder Bay. Pictured are local athletes with OPG's Aaron Del Pino and Chair of the 2011 Special Olympics Ontario Winter Games, Thunder Bay Police Chief J. P. Levesque. Photo: John Sims.

In January 2011, over 440 athletes, coaches, and managers, along with family and friends, gathered in Thunder Bay to compete in the Special Olympics Ontario 2011 Winter Games. The Games were hosted by Thunder Bay Police Services and featured figure skating, speed skating, alpine skiing, cross-country skiing, snowshoeing and curling. OPG played an active role in the Games as the Official Sponsor of the Volunteer Program. OPG employees from Northwest Hydro/Thermal were among more than 750 volunteers, referred to as the volunteer “army” during the Games. Thanks goes to the volunteers, organizers, partners, the Thunder Bay community, and those inspiring Special Olympics athletes, who made the 2011 Winter Games such a memorable success.

Special Olympics Ontario provides sports training and competition for people with intellectual disabilities. Special Olympics promotes the respect and human dignity of individuals through enhanced physical, social and psychological development through positive and successful experiences in sport. For more information on Special Olympics Ontario, please visit its website at www.specialolympicsontario.com.

First Nation and Métis Communities

In 2011, OPG supported 89 Aboriginal initiatives in the CCP focus areas of education, environment and community in an effort to help build stronger First Nation and Métis communities. Partner organizations/initiatives included First Nations, The Nishnawbe Aski Development Fund, Frontier College, The National Aboriginal Achievement Foundation (now known as INDSPIRE) and The Métis Nation of Ontario, to name only a few.

▼ OPG is proud to support Aboriginal culture including pow-wows and festivals where dancers of every age, from toddlers to elders, display their colourful and creative regalia.



▲ Pen Pal Project for elementary students from Six Nations and Caledonia/Haldimand County.

Building understanding and friendship begins with learning about each other and our cultures. In 2006, Suzie Miller, a teacher from Six Nations of the Grand River Territory, with support from Haldimand-Norfolk Reach, local school boards and volunteers, began a Pen Pal Project for elementary students from Six Nations of the Grand River Territory and Caledonia/Haldimand County. The pen pals correspond during the year and gather in June for a day of partnership activities, learning and fun.

In 2011, a total of 1,200 students from 13 schools participated in the Pen Pal program taking part in activities such as the formation of a living “Tree of Peace” (see page 56) which symbolizes friendship and respect. Through the Pen Pal Project students are able to build lifelong friendships based on understanding. OPG’s Nanticoke Generating Station is proud to support and participate in such an innovative developmental program.

Grassroots partnerships help make our communities stronger and healthier. These are just a few examples of the “power of community” partnerships. To learn more about OPG’s community partnerships, please visit our website at www.opg.com/community.



Risk Management

An All Hazards Approach

Whether the threat is from extreme events, or more routine reliability risks, the ability to manage the unexpected has become a critical aspect of business. OPG is working to minimize the occurrence of unexpected events and to be prepared to address them if they occur.

OPG's *All Hazards Approach* describes an organizational approach to emergency management. It recognizes that natural, technological and human-caused hazards threaten an organization's operations and objectives, and challenge its values and mission. This approach ensures that hazards and risks are identified, mitigation is implemented, plans and preparations are made, response is invoked if an incident occurs, recovery efforts are made, and post-incident residual impacts are managed.

Risk management is a crucial component of the *All Hazards Approach*. Risks are identified, documented and managed at each level of the organization. Processes are in place to learn from relevant non-industry and industry events to determine if there are any lessons to be incorporated at OPG.

Fukushima

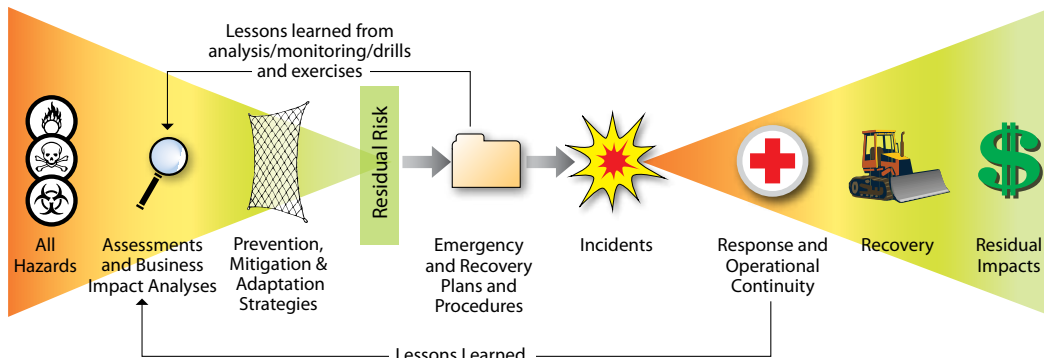


Following the events at Fukushima Daiichi nuclear facilities in Japan in March 2011, OPG systematically reviewed and verified design and operational defences against external hazards. OPG confirmed the geology at our sites was stable, and confirmed that our nuclear safety systems were robust with redundant back-up power. In light of these measures, it is highly unlikely that a Fukushima-type earthquake and tsunami disaster could happen here. Our stations provide a strong defense against external threats to safety.

▲ OPG President and CEO Tom Mitchell chaired the WANO Post-Fukushima Commission whose mandate was to advise on how lessons learned could be applied by operators of all nuclear facilities worldwide.

The assessment results enabled OPG to reaffirm the safety of our operations and in doing so, will help continue to earn the confidence of the communities and people we serve. As part of OPG's continuous improvement efforts to increase safety margins for our nuclear stations, OPG began a process of implementing actions, acquiring items such as portable standby electrical supplies, and improving emergency response procedures.

The All Hazards Approach



OPG assumed a strong leadership role with President and CEO Tom Mitchell serving as Chair of the Post-Fukushima Commission established by the World Association of Nuclear Operators.

Emergency Preparedness

Sharing expertise and facilitating opportunities to learn are important aspects of leadership and strong performance.

OPG has forged strong working relationships with provincial, regional and municipal emergency organizations.

OPG has developed an emergency preparedness program to ensure that the corporation can effectively and efficiently manage emergencies. The OPG Emergency Preparedness and Response Plan discusses the actions that will be taken to protect the health and safety of employees, the public, and to limit the impact of the crisis on security, production, the environment and the public.

Generating facilities are governed and operated according to licensing requirements. OPG's program addresses all relevant and credible



▲ New City of Pickering fire fighters receive training at OPG's Wesleyville fire training facility in Port Hope.



▲ OPG's Specialized Response Team support emergency responders on and off OPG sites.

natural and man-made risks that could have severe consequences. All OPG facilities, have Emergency Preparedness and Response Plans specific to their respective risks.

Nuclear Safety Oversight

The CNSC is responsible under the Nuclear Safety and Control Act (NSCA) for regulating all nuclear facilities and nuclear-related activities in Canada. The CNSC grants the stations operating licences, which set out the regulations and requirements the station must operate under. The CNSC has a presence at each nuclear station in Canada.

CNSC staff members have continuous access to inspect our stations and review our activities. CNSC staff report our activities to the CNSC Tribunal, an appointed body of individuals who provide further oversight on nuclear activities. For more information go to www.nuclearsafety.gc.ca/eng/ and www.opg.com/safety.

ECONOMIC

“In the face of challenging economic and market conditions, OPG’s net income in 2011 declined. Despite these challenging conditions, operating performance was strong as we increased our nuclear and hydroelectric generation while at the same time reducing operating costs.” Tom Mitchell, President and CEO



▲ Alexander GS Turbine in Nipigon.

Economic Contents

Business Transformation	40
Financial Strength	41
Rate Structure	41
Projects	42
Reliability	43
Coal Closure	43
Purchase of Good & Services	44
Employment	44

Key Areas of Economic Performance

OPG strives to bring value to Ontario and the communities in which we operate.

In 2011, OPG generated 84.7 TWh - nearly 4 TWh lower than 2010 production. Lower thermal generation was partially offset by higher generation from nuclear and hydroelectric stations.

Business Transformation

One of our most significant initiatives is Business Transformation - our roadmap for becoming more efficient and more effective across the entire organization. Business Transformation will help us achieve business planning targets for 2012-2014, including a \$200 million reduction in costs over three years. These savings reflect a headcount reduction of 1,000, which we'll endeavour to manage through attrition.

“ I’m proud of the fact that every dollar of net income that we earn stays here in Ontario to be reinvested in energy infrastructure and contribute to the social and economic fabric of the province. This is what a public power company should do.”

Tom Mitchell President and CEO



▲ Mountain Chute generator refurbishment to restore station's operating capacity in Renfrew.

OPG's Financial Strength Benefits Ontario

OPG's 2011 net income was \$416 million, compared to our 2010 net income of \$649 million. Much of the reduction resulted from a decrease in the earnings from the segregated funds that have been set aside to pay for decommissioning of nuclear plants and for long-term storage of used fuel. Revenues also were reduced because of the lower Ontario spot electricity market prices that were earned by our hydroelectric stations that are not covered by rate regulation.

OPG was awarded the Corporate Finance and Capital Markets Pinnacle Award from the Association of Financial Professionals. This award recognized the Lower Mattagami project's unique and groundbreaking financing, which resulted in considerable savings. The most crucial aspect to the financing was the ability to enable periodic financing over the construction period versus pre-financing for the entire project.

Rate Structure

The current prices which OPG receives for power from our nuclear stations and baseload hydroelectric operations are set by the Ontario Energy Board (OEB). The generation from assets that are not regulated receive the Ontario electricity spot market price, except where a cost recovery or energy supply agreement is in place.

Following an application filed by OPG in 2010, the OEB issued its rate decision. The decision resulted in rates that are approximately the

same as those previously in effect. This request was OPG's first in three years. OPG did not seek an increase in the rates that were in effect for electricity from our regulated assets in either 2009 or 2010.

OPG remains the lowest paid generator in Ontario. We are the only generating company in the Province to have our rates set by the OEB where costs are thoroughly examined using a public process that provides transparency for ratepayers. For details see www.ontarioenergyboard.ca

The average revenue for all electricity generators in Ontario, including OPG, (total of average Hourly Ontario Electricity Price (spot electricity price) and average global adjustment payments) was 7.2 cents/kWh. OPG's average revenue, including other energy revenues primarily from cost recovery agreements from Nanticoke, Lambton and Lennox GS and from Hydroelectric Energy Supply Agreements for hydroelectric stations, was 5.3 cents/kWh in 2011.



◀ OPG was awarded the 2011 AFP Pinnacle Grand Prize in Boston by the Association for Financial Professionals for our innovative Lower Mattagami Redevelopment Project financing strategy.

PROJECTS: New Generation • Refurbishment • Retirement

Location	Type	Scope	Description	Timeline
Darlington	Technical scope of refurbishment finalized; Environmental Assessment and final Integrated Safety Review submitted to CNSC.	Definition phase of retube and feeder replacement contract estimated at \$600 million.	Refurbishing Darlington GS will enable the 3,500 MW station to continue to meet Ontario's electricity needs for decades to come.	Midlife re-furbishment construction activities are projected to commence around 2016.
Darlington	New build	Public hearings on Environmental Assessment and Licence to prepare site completed.	The Environmental Impact Statement, licence application and additional information are available on the Canadian Environmental Assessment Registry Internet site Reference Number 07-05-29525.	Ongoing
Pickering B	Life extension	CNSC concluded that there are no significant regulatory or safety issues related to OPG's Continued Operations Plan.	Refurbishment of Pickering B will not be pursued. OPG will invest approximately \$200 million to continue the safe and reliable operation until around 2020, after which the decommissioning process will commence.	2020
Niagara Tunnel	Increased generation 10.2 km tunnel	Life to date capital expenditures are \$1.1 billion. Approved project budget \$1.6 billion.	Increase generation from Sir Adam Beck GS by 1.6 TWh/year. Lining and boring tunnel - Lining in progress.	Boring completed May 13, 2011. Project Dec 2013
Lower Mattagami	Increasing capacity of four stations	Life to date capital expenditures \$766 million. Approved project budget \$2.6 billion.	Increase capacity of four stations from 483 MW to 922 MW. Approx. 600 employed annually. Total of >4,000 person years of employment. More than 70 per cent of direct employment is from N. Ont. Currently 180 Aboriginal people employed. Up to 25 per cent equity share by Moose Cree First Nation.	Target completion June 2015
Little Jackfish	Development of 78 MW green field project	EA expected to be complete end of 2012.	Employ Lake Nipigon FN staff to support geotechnical and EA field work.	Ongoing
New Post Creek	Development of 25 MW green field project	Will generate 127 GWh electricity annually.	Will be undertaken between Coral Rapids Power (Taykwa Tagamou Nation) and OPG.	Ongoing
Atikokan	Conversion to biomass	Conversion to biomass in definition phase.	Conversion represents investment in renewable energy generation from a sustainable fuel recognized as beneficial to climate change mitigation.	2014
SAB Pumped Storage	Inspection and potential refurbishment	Dewatered to determine scope of refurbishment work.	750 acre reservoir geotechnical investigation to determine refurbishment design specifications.	Investigation complete Dec 31, 2011
Thunder Bay	Conversion to natural gas with capability to fuel with biomass	Conversion of two coal fired units to natural gas.	Minister of Energy issued directive to OPA to negotiate long-term energy supply contract with OPG.	Ongoing
Ranney Falls	Increased capacity	Proposed expansion from 10 to 20 MW.	EA to be conducted over the coming year.	Ongoing
Lambton/Nanticoke	Conversion to natural gas or biomass.	OPG continues to explore possibility of conversion from coal.	Decision expected in 2012.	Ongoing
Nanticoke	Retirement	Nanticoke U1 & 2 shutdown.	Units shutdown in advance of Dec 31, 2014 target.	Dec 31, 2011
Des Joachims GS, Elliot Chute GS, Silver Falls GS, Pump GS, SAB1 GS	Energy Efficiency Upgrades	Equipment energy efficiency.	Project upgrades included turbine runner, transformer, and Johnson valve.	Complete Dec 31, 2011

Coal Closure

Consistent with Ontario's Long-Term Energy Plan released in November 2010 and the Supply Mix Directive issued to the OPA in February 2011, OPG removed two additional coal-fueled units from service at Nanticoke Generating Station on December 31, 2011. The early closure of these units, in advance of December 31, 2014 has resulted in staff reductions of 290 at the Nanticoke GS and will continue to result in reduced payments to OPG from the Ontario Electricity Financial Corporation ("OEFC") under the contingency support agreement. OPG continues to evaluate the schedule for the remaining coal units while assessing the impact on staff and fuel inventories. This brings the total number of coal-fired units removed from service since October 2010 to six. The early closure of the Lambton and Nanticoke units will remove surplus generating capacity from Ontario's electricity system and save customers operating and maintenance costs between late 2010 and the end of 2014.

Well Maintained Assets Enhance Reliability

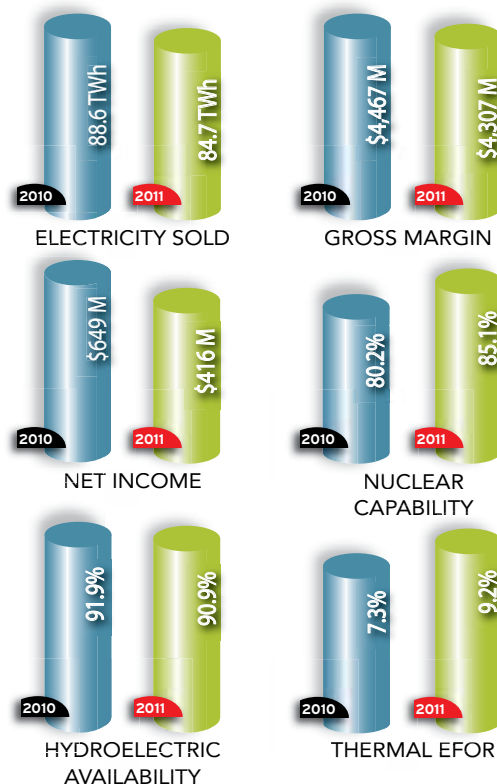
OPG operates a wide range of both newly constructed and established generating facilities across Ontario. Proactive improvement programs, regular maintenance and targeted equipment upgrades keep these assets operating at high levels of efficiency and reliability.

All of this translates into more reliable and efficient electricity generation to benefit Ontario.

For more information, go to: www.opg.com investor (financial reports, news releases, contact and information request)

Reliability Fast Facts

- ▶ Five out of 10 nuclear units operated with a capacity factor of greater than 90 per cent.
- ▶ Four units at Darlington averaged 93.6 per cent capacity factor.
- ▶ In comparison, overall gross capacity of CANDUs worldwide in 2011 was 85.3 per cent.
- ▶ Four OPG units rank in the top 10 performing CANDUs worldwide.
- ▶ Three OPG units are in the top five performing CANDUs worldwide.
- ▶ Pickering won the Plant Engineering and Maintenance Award in recognition of maintenance excellence and asset management professionalism.
- ▶ Hydroelectric availability was 90.9 per cent.
- ▶ Thermal Equivalent Forced Outage Rate (EFOR) was 9.2 per cent.



Note: For Thermal Equivalent Forced Outage Rate EFOR lower is better.

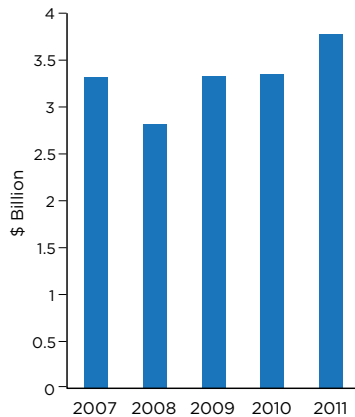
Pumped Storage

Sir Adam Beck (SAB) Pump Generating Station (PGS) in Niagara has a capacity of 174 MW. This is the only pumped storage facility in Canada, and it enables more effective use of the water at the SAB generating stations. SAB PGS allows storage of excess water during off-peak hours. During peak hours, the stored water is released from the reservoir to generate power both at the pump station and again at the SAB generating station. This unique arrangement and high efficiency turbines make the Sir Adam Beck complex one of the most efficient power generation systems in Canada. The reservoir covers an area about 750 acres. The PGS reservoir has been in service for over fifty years and reservoir refurbishment alternatives are being considered to ensure the facility continues to operate safely for many more decades to come. The reservoir was fully dewatered last year for the first time since 1958 to carry out studies, and was returned to service by year end. These engineering studies will continue throughout 2012.

Purchase of Goods and Services

OPG provides support to the Province of Ontario through the purchase of goods and services. In 2011, the total purchase of goods and services in Ontario by OPG totalled \$3.78 billion.

Goods and Services Purchased by OPG in Ontario



Employment

Human Resources Fast Facts

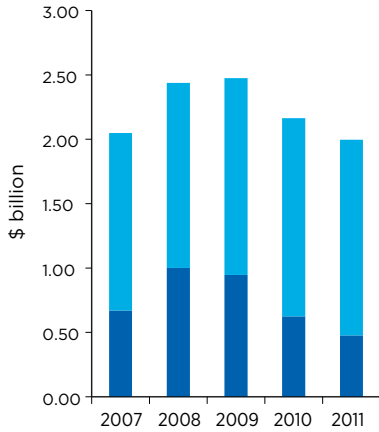
- ▶ Approximately 11,400 full-time employees (down 3.4 per cent from 2010).
- ▶ Approximately 700 contract casual construction and non-regular staff (down 30 per cent from 2010).
- ▶ 173 external hires in 2011.
- ▶ 1,090 internal hires in 2011.
- ▶ Annual turnover due to retirement: 3.8 per cent
- ▶ Annual turnover due to attrition: 4.8 per cent.
- ▶ 30 per cent of the workforce are eligible to retire.
- ▶ 89 per cent of the full-time employees are represented by either the Power Workers' Union (6,600) or the Society of Energy Professionals (3,600).

Employee Compensation and Provincial Payments

In 2011, compensation to OPG employees totalled approximately \$1.52 billion. Recognizing that most OPG employees live in Ontario and purchase their goods and services locally, this compensation directs a substantial transfer of wealth back to the Province.

OPG creates additional benefit for the provincial economy through payments made in lieu of taxes, gross revenue charges (including water rental payments), dividends, interest on long-term debt, Market Power Mitigation Agreement Rebates, Revenue Limit Rebate and other payments to the Province of Ontario. In 2011, these payments totalled nearly \$477 million.

OPG Salaries and Payments Made to the Province of Ontario



■ OPG Employee Salaries

■ Payments in Lieu of Taxes, Gross Revenue Charges (incl Water Rental Payments*), Dividends, Interest on Long-Term Debt, Market Power Mitigation Agreement Rebates**, Revenue Limit Rebate (ONPA)***, OEFC****, capital/income tax payments, and other payments

* This amount only includes water rentals charged under the Gross Revenue Charge (GRC) regime. Therefore, it does not include amounts charged for non-provincial water rentals.

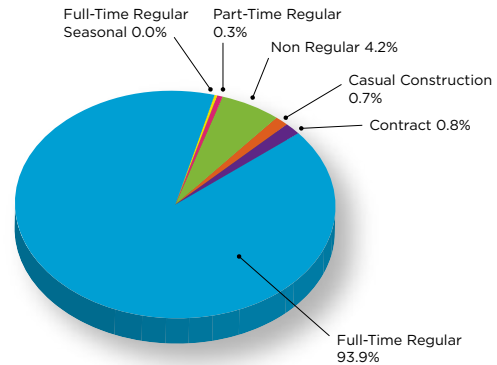
** Replaced by ONPA (Revenue Limit Rebate) effective April 1, 2005

*** ONPA - OPG non-prescribed Asset Rebate, now referred to as the "OPG Rebate," effective April 1, 2005

**** OEFC - Ontario Electricity Financial Corporation

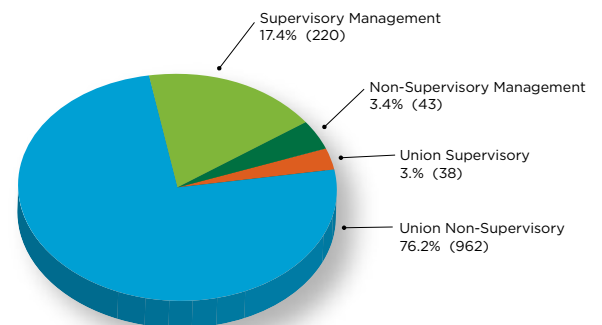
The following pie charts illustrate the breakdown of employees by category and new hires by sub-category.

Employees by Category



New hires include both external and internal hires. External hires include both new hires and rehires. Internal hires include all employees who have a job change during the year based on a month-to-month comparison of employee information data including those whose employment changes from temporary to permanent.

New Hires (1,263) by Sub-Category



Based on the above definitions, there were 173 external hires and 1,090 internal hires during 2011. "Union staff" includes both Power Workers' Union, and the Society, and Management Staff includes Executives.

The definition of supervisory includes any employee in Employment Equity Occupational groups 1 and 2.

Appendix A

Nuclear										
General Information										
Pickering A & B GS	Generation (net GWh)					Critical Group Dose (µSv)				
Generation capacity:	2011	2010	2009	2008	2007	2011	2010	2009	2008	2007
Pickering A: 1,030 MW net	19,675	19,236	20,761	19,123	16,855	0.9	1.0	1.8	4.1	2.6
Pickering B: 2,064 MW net	Located on Lake Ontario in the city of Pickering, each generating station has four units. Two of the 515 MW Pickering A units taken out of service during the nuclear recovery program will not be refurbished. Number of used fuel bundles stored on site: 642,089 Tel: (905) 839-1151									
Located on Lake Ontario in the city of Pickering, each generating station has four units. Two of the 515 MW Pickering A units taken out of service during the nuclear recovery program will not be refurbished. Number of used fuel bundles stored on site: 642,089 Tel: (905) 839-1151										

Darlington GS	Generation (net GWh)					Critical Group Dose (µSv)				
Generation capacity:	2011	2010	2009	2008	2007	2011	2010	2009	2008	2007
3,512 MW net	28,951	26,549	26,037	28,840	27,155	0.6	0.6	0.7	1.3	1.4
Located on Lake Ontario in the town of Newcastle, 70 km east of Toronto. This generating station has four units. Number of used fuel bundles stored on site: 411,747 Tel: (905) 623-6670										

▪ Totals may not add up due to rounding

Thermal

General Information	Net Generation and Emissions*										
Atikokan GS Generation capacity: 211 MW net Located west of Thunder Bay, the station has one coal-fired unit equipped with low-NO _x burners.	Generation (net GWh)					Emissions (tonnes)					
	2011	2010	2009	2008	2007		2011	2010	2009	2008	2007
	43	417	133	313	651	SO ₂	358	2,401	837	1,613	2,999
						NO _x	148	1,040	436	757	1,192
						CO ₂	75,280	496,220	197,000	415,000	751,000
Lambton GS Generation capacity: 950 MW net Located on the St. Clair River, the station has four coal-fired units. Two are equipped with SO ₂ scrubbers and selective catalytic reduction (SCR) equipment to reduce NO _x emissions. Two units retired from service (Oct. 1, 2010) as part of the OPG coal closure program.	Generation (net GWh)					Emissions (tonnes)					
	2011	2010	2009	2008	2007		2011	2010	2009	2008	2007
	1,134	3,317	3,596	6,544	8,855	SO ₂	1,340	5,853	6,191	18,115	30,796
						NO _x	1,624	3,062	3,932	6,444	9,205
						CO ₂	1,249,610	3,286,630	3,729,000	6,373,000	8,459,000
Lennox GS Generation capacity: 2,100 MW net Located on Lake Ontario in the town of Greater Napanee. The station has four oil and/or natural gas-fired units.	Generation (net GWh)					Emissions (tonnes)					
	2011	2010	2009	2008	2007		2011	2010	2009	2008	2007
	11	60	122	278	789	SO ₂	43	126	571	405	899
						NO _x	89	91	213	354	936
						CO ₂	77,200	95,000	194,000	264,000	583,000
Nanticoke GS Generation capacity: 1,880 MW net Located on Lake Erie, the station has eight coal-fired units fitted with low-NO _x burners, two of which are equipped with SCR equipment to reduce NO _x emissions. Four units retired from service (two on Oct. 1, 2010 and two on Dec. 31, 2011) as part of the OPG coal closure program.	Generation (net GWh)					Emissions (tonnes)					
	2011	2010	2009	2008	2007		2011	2010	2009	2008	2007
	2,489	8,206	5,563	15,329	18,083	SO ₂	9,205	28,568	21,480	52,720	67,423
						NO _x	3,544	11,161	8,314	20,087	22,376
						CO ₂	2,816,530	8,538,000	6,010,000	15,412,000	17,868,800
Thunder Bay GS Generation capacity: 306 MW net Located on Lake Superior, this station has two coal-fired units.	Generation (net GWh)					Emissions (tonnes)					
	2011	2010	2009	2008	2007		2011	2010	2009	2008	2007
	76	191	123	702	590	SO ₂	317	713	421	2,528	2,530
						NO _x	386	608	447	1,820	1,550
						CO ₂	138,940	264,760	188,000	800,000	706,000

* NO_x is reported as NO₂.

Hydro

General Information	Net Generation				
Niagara Plant Group	Generation (net GWh)				
Generation Capacity: 2,267 MW Includes five stations, Headquarters in Niagara area	2011	2010	2009	2008	2007
	12,614	12,415	12,291	11,907	11,530
Ottawa/St. Lawrence Plant Group	Generation (net GWh)				
Generation Capacity: 2,571 MW Includes 10 stations, headquarters in Renfrew	2011	2010	2009	2008	2007
	12,535	11,154	13,926	13,873	11,484
Northeast Plant Group	Generation (net GWh)				
Generation Capacity: 1,342 MW Includes 13 stations, headquarters in Timmins	2011	2010	2009	2008	2007
	3,128	2,875	4,723	5,112	4,562
Northwest Plant Group	Generation (net GWh)				
Generation Capacity: 687 MW Includes 11 stations, headquarters in Thunder Bay	2011	2010	2009	2008	2007
	3,442	3,558	4,630	4,894	3,865
Central Hydro Plant Group EcoLogo [™] -certified	Generation (net GWh)				
Generation Capacity: 138 MW Headquarters in North Bay	2011	2010	2009	2008	2007
EcoLogo [™] -certified Green Power generation capacity from 28 OPG stations (26 small hydro stations including one NEPG station, and two wind turbines): 125 MW (at Dec. 31, 2011)	592	563	579	693	620
EcoLogo [™] -certified Green Power capacity available from Power Purchase Agreements	0	0	0	0	12
Total available EcoLogo [™] -certified Green Power capacity: 125 MW (at Dec. 31, 2011)	592	563	579	693	632
Other Central Hydro Plant Group capacity	Generation (net GWh)				
Other Central Hydro capacity (non-EcoLogo[™]): Eugenia Falls hydro station: 6.1 MW; New York Wind Farm: 6.6 MW)	2011	2010	2009	2008	2007
	44	39	45	46	38

Appendix B

Indicator					
ENERGY GENERATION BY SOURCES (gross GWh)	2011	2010	2009	2008	2007
Thermal	4,381	13,300	10,570	24,807	30,741
Hydro (Renewable - excl. Central Hydro Plant Group)	32,055	30,376	36,178	36,305	31,754
Nuclear	51,644	48,718	49,744	51,140	47,003
Central Hydro Plant Group (includes one NE Plant Group station)	636	603	626	726	669
Total Internal Energy Generated	88,716	92,997	97,118	112,978	110,168
ENERGY GENERATION BY SOURCE (net GWh)	2011	2010	2009	2008	2007
Thermal	3,717	12,192	9,538	23,165	28,969
Hydro (Renewable - excl. Central Hydro Plant Group)	31,709	29,991	35,536	35,724	31,339
Nuclear	48,626	45,785	46,799	48,182	44,010
Central Hydro Plant Group (includes one NE Plant Group station, wind, power purchases)	636	602	624	726	670
Total Internal Energy Output (incl. power purchases)	84,687	88,570	92,497	107,797	104,987
ENERGY CONVERSION EFFICIENCY OF THERMAL GENERATING STATIONS	2011	2010	2009	2008	2007
Total Energy Input (GWh equiv.)	13,490	39,497	31,616	70,940	86,337
Net Energy Output (GWh)	3,678	12,192	9,538	23,165	28,969
Fuel Conversion Efficiency (%)	27.3%	30.9%	30.2%	32.7%	33.6%
OPG INTERNAL ENERGY EFFICIENCY	2011	2010	2009	2008	2007
Gross Generation (GWh)	88,716	92,997	97,118	112,978	110,168
Net Generation (GWh)	84,687	88,570	92,497	107,797	104,987
Generation Energy Efficiency (%)	95.46%	95.24%	95.24%	95.41%	95.30%
Internal Energy Saving - Cumulative since 1994 (GWh/yr)	2,481	2,469	2,434	2,405	2,389
Avoided CO ₂ , NO _x (as NO ₂) and SO ₂ (tonnes)	2,919,829	2,578,454	2,644,565	2,425,715	2,350,772
\$ Value of Energy Savings @ average price paid to OPG 2011 = 5.3¢/kwh; 2010 = 4.7¢/kwh; 2009 = 4.5¢/kwh; 2008 = 4.76¢/kwh; 2007 = 4.6¢/kwh; 2006 = 4.63¢/kwh	\$131,480,620	\$111,090,092	\$109,537,997	\$114,458,089	\$109,890,398
Annual Incremental Energy Saving (% of internal energy use)	0.3%	0.8%	0.6%	0.3%	3.0%
Annual Incremental Energy Saving (GWh/yr)	12.1	34.5	29.6	15.7	155.0

Indicator					
ATMOSPHERIC EMISSIONS - THERMAL	2011	2010	2009	2008	2007
Total Gross Annual CO ₂ Emissions (tonnes)	4,357,560	12,680,340	10,320,000	23,264,000	28,366,000
Total Gross Annual SO ₂ Emissions (tonnes)	11,264	37,661	29,500	75,382	104,647
Total Gross Annual NO _x Emissions (tonnes, as NO ₂)	5,790	15,962	13,340	29,462	35,261
EMISSION RATES - THERMAL	2011	2010	2009	2008	2007
CO ₂ Emissions (tonnes/GWh-net)	1,172	1,040	1,082	1,004	979
SO ₂ Emissions (tonnes/GWh-net)	3.03	3.09	3.09	3.25	3.61
NO _x Emissions (tonnes/Gwh-net, as NO ₂)	1.56	1.31	1.40	1.27	1.22
ATMOSPHERIC EMISSIONS - NUCLEAR	2011	2010	2009	2008	2007
Total Gross Annual CO ₂ Emissions (tonnes)	9,225	7,688	9,107	6,289	15,428
Total Gross Annual SO ₂ Emissions (tonnes)	0.1	1	0.2	0.6	3
Total Gross Annual NO _x Emissions (tonnes, as NO ₂)	41	33	40	26	85
ATMOSPHERIC EMISSIONS - OPG	2011	2010	2009	2008	2007
Total Gross Annual CO ₂ Emissions (tonnes)	4,366,785	12,688,028	10,329,107	23,270,289	28,381,428
Total Gross Annual SO ₂ Emissions (tonnes)	11,261	37,661	29,500	75,383	104,650
Total Gross Annual NO _x Emissions (tonnes, as NO ₂)	5,828	15,996	13,380	29,488	35,346
EMISSION RATES - TOTAL OPG	2011	2010	2009	2008	2007
CO ₂ Emissions (tonnes/GWh-net)	52	143	112	216	270
SO ₂ Emissions (tonnes/GWh-net)	0.13	0.43	0.32	0.70	1.00
NO _x Emissions (tonnes/GWh-net, as NO ₂)	0.07	0.18	0.14	0.27	0.34
NUMBER OF REPORTABLE SPILLS	2011	2010	2009	2008	2007
Category A Spills	0	0	0	0	0
Category B Spills	0	0	1	0	2
Category C Spills	18	25	15	15*	6
Category D Spills	n/a	n/a	n/a	n/a	22

* Previously reported 'D' spills merged with 'C' spills to align with change to spill rating scheme in 2008.

Indicator

PCB MANAGEMENT (tonnes)	2011	2010	2009	2008	2007
High-level PCB ⁽¹⁾ material in storage ^(3, 4, 6)	7	1	2	7	7
High-level PCB ⁽¹⁾ materials sent for destruction ⁽⁶⁾	21	215	72	9	19
Estimated inventory of high-level PCB ^(1, 5) material in service*	0	0	0	41	42
Low-level PCB ⁽²⁾ materials in storage ^(3, 6)	0	1	2	9	2
Low-level PCB ⁽²⁾ material sent for destruction ⁽⁶⁾	140	42	7	11	25
Estimated inventory of low-level PCB ⁽²⁾ material in service	18	23	15	3	5
Total year-end inventory (waste in storage + in-service equipment)	25	25	19	60	57
Total PCB material sent for destruction	161	256	78	20	44
<p>(1) High-level PCB = ≥ 500 mg/kg PCB (2) Low-level PCB = $\geq 50, < 500$ mg/kg PCB (3) at year end (4) Does not include PCB fluorescent light ballasts abandoned in place in out-of-service fixtures (5) Does not include PCB fluorescent light ballasts (6) Historical data restated to reflect reclassification of PCB ballasts from low-level to high-level PCB. *Excludes in-service high-level PCB equipment at Bruce Power included in previous SD Report inventories</p>					
RADIOACTIVE WASTE MANAGEMENT	2011	2010	2009	2008	2007
Used fuel - annual production (tonnes of uranium)	1,610	1,357	1,345	1,354	1,326
Used fuel in storage (tonnes of uranium)	39,319	37,910	36,521	35,154	33,713
Low and intermediate radioactive waste produced (m ³)	2,924	2,921	3,078	2,708	3,043
Low and intermediate radioactive waste stored (m ³)	3,913	2,615	3,300	3,568	3,530
UTILIZATION OF SOLID COMBUSTION BY PRODUCTS	2011	2010	2009	2008	2007
Total ash and gypsum produced (tonnes)	241,140	575,140	517,371	975,213	1,183,383
Total ash and gypsum recycled (tonnes)	209,379	388,885	381,205	615,918	760,057
Diversion rate (%)	87%	68%	74%	63%	64%
HAZARDOUS WASTE GENERATION	2011	2010	2009	2008	2007
Solids (tonnes)	339	690	464	190	338
Liquids (kilolitres)	1,458	1,943	1,904	2,668	2,430
WATER USE (million m ³)	2011	2010	2009	2008	2007
Turbine flows - hydro stations (total flow)	483,200	400,397	505,967	503,533	424,623
Cooling and service water use (non-consumptive)	10,829	12,221	12,372	13,807	13,702

National Pollution Release Inventory (NPRI)⁽¹⁾

NPRI Emissions: air, water and land ⁽⁴⁾ (tonnes unless otherwise specified)	2010	2009	2008	2007	2006
Aluminum	218.6	250.060	466.854	393.280	307.932
Ammonia	43.42	30.8	40.3	40.2	27.554
Arsenic	3.314	6.284	15.255	19.075	15.625
Benzo(a)anthracene	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	0.000
Benzo(a)phenanthrene	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	0.000
Benzo(a)pyrene	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	0.000
Benzo(b)fluoranthene	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	0.000
Benzo(e)pyrene	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	0.000
Benzo(g,h,i)perylene	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	0.000
Benzo(j)fluoranthene	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	0.000
Benzo(k)fluoranthene	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	0.000
Cadmium	18 kg	126 kg	342 kg	269 kg	400 kg
Chromium	21.418	18.852	47.553	44.522	46.308
Cobalt	5.886	NR ⁽²⁾	17.065	21.501	7.81
Copper	25.342	25.442	68.72	77.625	62.3
Dibenz(a,h)anthracene	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	0.000
Dibenz(a,j)acridine	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	0.000
Dibenzo(a,i)pyrene	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	0
7H-Dibenzo(c,g)carbazole	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	3.1
Dioxins & Furans	0.661 g TEQ ⁽³⁾	0.995 g TEQ ⁽³⁾	0.798 g TEQ ⁽³⁾	1.603 g TEQ ⁽³⁾	1.042 g TEQ ⁽³⁾
Fluoranthene	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	1.200
HCFC-22	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	0
Hexachlorobenzene	5.662 grams	4.929 grams	3.612 grams	0.042 grams	0.103 grams
Hydrazine	0.82	0.746	0.684	1.096	0.881
Hydrochloric Acid	1,112	1,577	2,720	3,142	2,308
Hydrogen Fluoride	133.0	126.0	270.0	342.0	308
Indeno(1,2,3-cd)pyrene	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	0
Lead	10.24	7.79	20.70	27.47	20.33
Manganese	33.34	27.08	63.05	76.13	67.20
Mercury	186 kg	155 kg	419 kg	516 kg	445 kg
Nickel	19.547	16.56	39.091	51.495	36.881
n-Hexane	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	0
Perylene	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	0 kg
Phenanthrene	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	0.005
Phosphorus	489	822	822	912	992
Pyrene	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	1.100
Selenium	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	8.9	7.6
Sulphuric Acid	452.319	522.983	575.006	493.131	222.594
Vanadium	38.7	30.5	81.0	102.1	79.4
Zinc	35.602	20.702	54.500	67.000	58.900

Criteria Air Contaminants (tonnes)	2010	2009	2008	2007	2006
Carbon Monoxide	5,693.00	1,813.00	6,012.00	10,817.00	8,163.00
Oxides of Nitrogen (as NO ₂)	16,016.00	13,457.00	29,532.00	35,363.00	30,841.00
PM - Total Particulate Matter	1,432.08	2,104.82	4,097.20	7,776.06	8,259.56
PM10 - particulate matter ≤ 10µ ⁽⁵⁾	1,555.08	1,424.76	2,679.32	4,179.45	3,750.55
PM2.5 - particulate matter ≤ 2.5µ ⁽⁵⁾	530.60	700.06	1,058.89	1,586.56	1,295.96
Sulphur Dioxide	37,662.03	29,500.05	75,380.03	104,647.65	87,275.59
Volatile Organic Compounds (VOCs)	38.00	48.00	74.00	166.00	376.00

(1) 2011 data was not available at the time of publishing.

(2) NR not reported in given year

(3) g TEQ is grams Toxic Equivalent

(4) For detailed information on the breakdown of OPG's NPRI data by emissions to air, water, and land, please visit the NPRI web site at http://www.ec.gc.ca/pdb/npri/npri_home_e.cfm

(5) µ is microns (particle diameter)

Appendix C - Global Reporting Initiative (GRI) Indicator Alignment

Disclosure No.	G3 Indicator	Page
Economic Performance Indicators		
EC1	Economic value generated and distributed	40-45
EC2	Climate change	15
EC6	Procurement from local suppliers	44
EC7	Local hiring	44-45
EC8	Infrastructure investments that benefit local communities	41-42
EC9	Indirect economic impacts	40-45
Environmental Performance Indicators		
EN1	Materials used by weight or volume (PCBs)	20
EN3	Direct energy consumption	App B
EN5	Internal energy efficiency	11
EN7	Reduction of internal energy consumption	11
EN8	Total water withdrawal by source	16, App B
EN12	Description of impacts on biodiversity	21-24
EN13	Habitats protected or restored	22-24
EN14	Management of impacts on biodiversity	24
EN16	Greenhouse gas (GHG) emissions	12,15 App B
EN17	Other relevant GHG emissions	15
EN18	Initiatives to reduce GHG emissions	12-15
EN20	Emissions of NO _x , SO _x and other pollutants	12, App B
EN22	Total quantity of waste	18-20, App B
EN23	Number and volume of spills	18, App B
EN26	Environmental impact management	10
EN28	Non-compliance with environmental regulations	11
Social Performance Indicators		
Labour Practices and Decent Work		
LA1	Total workforce	45
LA2	Total number and rate of turnover	44
LA4	Percentage of employees covered by collective bargaining	44
LA6	Joint Health and Safety Committees coverage	26

Disclosure No.	G3 Indicator	Page
Labour Practices and Decent Work cont'd		
LA7	Work related injuries, diseases, absenteeism	26
LA8	Assistance with serious diseases	27-28
LA10	Training	28-29
LA11	Skills development and training	28-29, 32
LA13	Diversity and equal opportunity	29-30
Society		
SO1	Management of impacts on communities	27-39
Product Service Responsibility		
PR1	Life-cycle analysis for health and safety of products and services	20
Electric Utility Sector Supplement		
Company Profile		
EU1	Installed capacity	2, App B
EU2	Net energy output	2, App B
Economy - Management Approach		
EU6	Availability/reliability	43
EU8	Research and development activity and expenditure	29
Labour practices and disclosures		
EU 14	Programs to ensure availability of skilled workforce	28, 29, 32, 34, 37
EU 15	Percentage of employees eligible to retire	44
EU 16	Policies and requirements regarding H&S of employees and contractors	26-28
Societal Performance Indicators		
SO3	Percentage employees trained in anti-corruption policies and procedures	25
Social - Society - Management Approach		
EU19	Stakeholder participation in decision making process	6, 12, 13, 30, 31
EU 21	Emergency preparedness and response	38-39
Social - Product Responsibility - Performance Indicator		
EU25	Injuries and fatalities involving company assets	26
EU30	Plant availability - capacity factor	43

Glossary

Biodiversity	the degree of variation of life forms, and is a measure of the health of ecosystems.
Biomass	a renewable fuel from forest and agricultural products.
Capacity Factor	the ratio (or percentage) of the actual output of a power plant over a period of time and its potential output if it had operated at full design capacity the entire time.
CO ₂	(carbon dioxide) the principle greenhouse gas, mostly generated by fossil fuel combustion.
Co-Generation	the simultaneous generation of both electricity and useful heat.
Dose	the energy absorbed by the human body when exposed to ionizing radiation.
EMS	environmental management system (generally ISO 14001).
Fly Ash	a residual fine particulate generated in the combustion of coal, conveyed with flue gas. In OPG's thermal plants more than 99 per cent is captured by electrostatic precipitators.
GHG	(greenhouse gas) gases that trap heat in the atmosphere.
GHG Cap and Trade	Cap and Trade (also known as Emissions Trading) is a market based mechanism that places a dollar value on the targeted emissions thus creating an economic incentive to cause reductions.
Gigawatt hour (GWh)	One billion watt hours (one million kilowatt hours).
GRI	(Global Reporting Initiative) a widely accepted sustainability reporting guideline standard.
Intake Groyne	wall of rock extending into the lake perpendicular to the shore.
ISO 14001	an internationally accepted management system standard for environment.
JHSC	Joint Health and Safety Committees consists of labour and management representatives who meet on a regular basis to deal with health and safety issues.
Kilowatt hour (kWh)	is a measure of electricity demand per hour by customers. The average Ontario household uses 1,000 kWh per month.
LILRW	low and intermediate level radioactive waste e.g. gloves, coveralls, tools, and wipes.
Megawatt (MW)	is one million watts.
MISA	Municipal Industrial Strategy for Abatement - a provincial program to address levels of persistent toxic substances in industrial discharge.
Net generation	gross generation minus internal energy use.
NO _x	(nitrogen oxides) chemical compounds that contribute to the formation of smog and acidic deposits.
ODS	(ozone depleting substance) certain chemicals that breakdown in the stratosphere and release chemicals which destroy the stratospheric ozone layer. Most ODS are also greenhouse gases.
Polychlorinated Biphenyls (PCBs)	organic compounds that were widely used for a variety of applications, such as dielectric fluids in transformers, capacitors, and coolants.
SF ₆	(sulphur hexafluoride) chemical compound widely used to insulate high voltage equipment – a powerful greenhouse gas.
SO ₂	(sulphur dioxide) chemical compound that contributes to the formation of acidic deposits.
Stakeholder	individual or group that has an interest in an organization's decisions or operations.
Tritium	a radioactive isotope of hydrogen.
Tritiated Water	is a radioactive form of water where the usual hydrogen atoms are replaced with tritium. Produced when heavy water is exposed to neutron radiation in a reactor.

- ▼ In 2011, 1,200 students from 13 schools participated in the Pen Pal program taking part in activities such as the formation of a living “Tree of Peace” which symbolizes friendship and respect. Through the Pen Pal Project students are able to build lifelong friendships based on understanding. OPG’s Nanticoke Generating Station is proud to support and participate in this innovative development program.





At OPG, the principles of social responsibility influence all aspects of our operations and decision making.

▲ Clockwise from top left: Harmon GS Development
 Pickering Nuclear Outage Work
 Atikokan GS Turbine Outage Maintenance
 Big Becky Breakthrough - Niagara Plant Group
 Nuclear's Tuesdays on the Trail
 Participant Tent - Tuesdays on the Trail
 Annual Tree Planting - Nanticoke GS
 Tree Planting - Pickering Nuclear
 Pine Portage Project Engineers



We welcome your comments, questions or suggestions for report improvement.

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- ▲ Nanticoke GS Tree Planting
- ◀ Smokey Falls GS Redevelopment



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Materials used in this report are environmentally friendly. Cover and text stocks are recycled and recyclable, with a minimum of 100% post-consumer waste. Vegetable-based inks have been used throughout.

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